CONVENTION ISSUE

the

Journal

of the association for physical and mental rehabilitation

CORRECTIVE THERAPY

MAY—JUNE, 1960

VOL. 14, NO. 3

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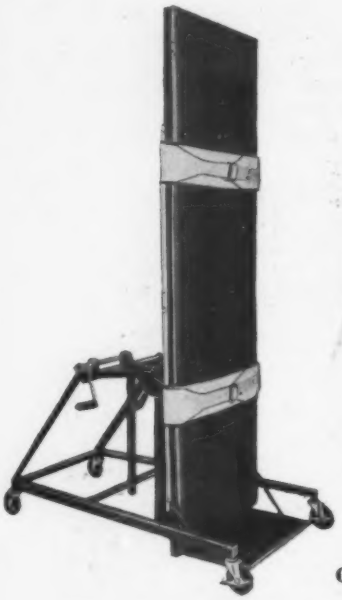

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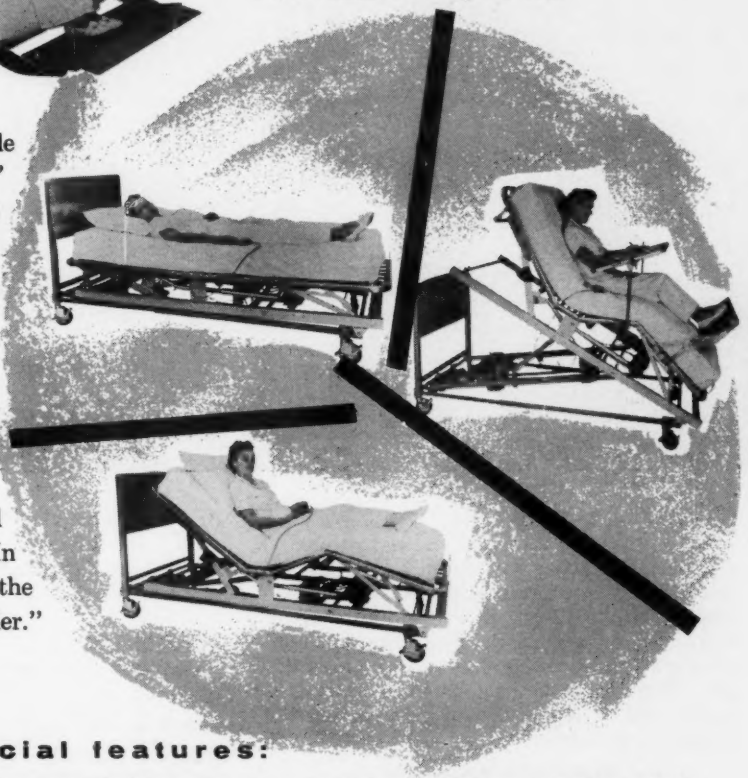

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TENTATIVE PROGRAM

Fourth Tri-Organizational Scientific and Clinical Conference

Association for Physical and Mental Rehabilitation

Association of Medical Rehabilitation Directors and Coordinators

American Association of Rehabilitation Therapists

June 13-17, 1960

The Miramar Hotel, Santa Monica, Calif.

PRE-CONFERENCE BUSINESS MEETINGS*
SATURDAY — June 11

SUNDAY — June 12
9:00-12:00—APMR (Jupiter and Venus Room)
9:00-12:00—AART (Saturn and Mars Room)
1:00- 4:00—APMR
1:00- 4:00—AART
1:00- 4:00—AMRDC (President's Suite)
*AMRDC will not meet on Saturday.

MONDAY — June 13
9:00-5:00—Registration.

9:00—APMR, AMRDC Sectional Meeting.

9:05—*Contributions of the Joint Commission on Mental Illness* — John E. Davis, Sc.D., Executive Director, APMR.

9:35—*What is Epi-Hab?*—Frank Risch, Ph.D., Chief, Epi-Rehab., VAC, Los Angeles.

10:10—*Is Industry Overlooking an Untapped Source of Labor?*—Reuben J. Margolin, Ph.D., Supervisor, Member-Employee Program, Brockton, Mass.

10:50—*Contrasenscence*—Everett W. DeLong, M.D., Beverly Hills, Calif.

11:25—*Vocational Aspects of Rehabilitation*—T. O. Kraabel, Director, Vocational Rehabilitation and Education, VACO, Washington, D. C.

9:00—Manual Arts Therapy Sectional Meeting.

10:30—*Manual Arts Therapy and the Aging Veteran*—Earl Clifton, RRT, Chief, MAT, VAH, Long Beach, Calif.

11:15—*Clinical Aims and Practices of MAT in GM&S, TB and NP Hospitals*—Panel to be announced.

9:00—Educational Therapy Sectional Meeting.

9:05—*Educational Therapy: Scope in GM&S Hospitals*—Mary L. Keever, RRT, Chief, ET, VAH, Houston, Texas.

9:45—*Educational Therapy in TB Hospitals*—Speaker to be announced.

10:30—*Demonstrations of Educational Therapy Equipment and Materials*—Sara M. Drew, RRT Chief ET, VAH, Palo Alto, Calif., Mont Hamilton, RRT, Chief, ET, VAH, Sepulveda, Calif., Harold Turpin, RRT, Chief, ET, VAH, American Lake, Wash., and Georgia E. Crosthwaite, RRT, ET, VAH, Long Beach, Calif.

12:00—Lunch.

1:00—Opening of Conference; Aldo S. Romiti, RRT, Presiding.
Welcome—Mayor of Santa Monica.
Response—Tri-organizational presidents.
Introduction—Karl Haase, M.D., Chief, PM&RS, VAC, Los Angeles.
Keynote Address—Arthur C. Jones, M.D., Past President, American College of Physical Medicine and Rehabilitation.

3:00—APMR Business Meeting (East Section, Satellite Room)
AMRDC Business Meeting (Jupiter and Venus Room)
AART Business Meeting (West Section, Satellite Room)

5:00—Cocktails (Suite of Conference Chairman) Hosts: Calif. Chapters.

6:30—Conference Social Mixer. Hawaiian Luau at pool side. Come in costume. Door prizes.

TUESDAY — June 14
8:00—Registration; Visit exhibits open in Nautilus Room.

9:00—Wives' Coffee Group; pool side.

9:00—General Session (West Section, Satellite Room) Adm. C. C. Troensegaard, M.D., USN, Ret., West Los Angeles, Calif., Presiding.

9:05—Panel: *The Team Approach in Physical Medicine and Rehabilitation.* Moderator: Lawrence Marmer, M.D., Division of Orthopedics, UCLA Medical School. Panel Members: Frank B. Marquardt, Coordinator, PM&RS, VAH, Brentwood, Calif.; Zane E. Grimm, CCT, Oakland, Calif.; Lela M. Rankin, RRT, VAH, Long Beach, Calif.; Kenneth A. Nelson, RRT, Chief, MAT, VAH, Sepulveda, Calif.; Lucile N. Rosenthal, OTR, Pres., So. Calif. Chapter, AOTA.; Nancy B. Ward, RPT, Program Dir., Calif. Chapter APTA.

10:15—*How to Prescribe a Wheelchair*—Roy H. Nyquist, M.D., Spinal Cord Injury Service, VAH, Long Beach, Calif., and Ernest Bors, Chief, Spinal Cord Injury Service, VAH, Long Beach, Calif.

10:30—*Aphasia Evaluation and Language Retraining Techniques*—Mildred R. McKeown, Chief, Aphasia Unit, VAH, Long Beach, Calif.

12:00—Conference Luncheon; Hotel garden. Door prizes.

1:00—General Session.

1:05—*Rehabilitation Needs in Public Health and Chronic Disease*—A. Goerke, M.D., Director Public Health, UCLA Medical School.

2:00—*State Mental Institutions*—Daniel Blain, M.D., Director, Calif. State Dept., Mental Health.

3:00—APMR, AART, AMRDC Business Meeting (Same sites as Monday).

WEDNESDAY — June 15
8:00—Registration: Visit Exhibits.

9:00—APMR Sectional Meeting (East Section, Satellite Room); L. F. Valentine, M.D., Santa Monica, Presiding.

9:05—*Give Them the Keys to Service in Colleges and Universities*—Carl H. Young, Ph.D., Dept. of Physical Education, UCLA.

9:20—*Need for and Functions of Corrective Therapy in Private Medical Installations*—Louis F. Montovano, CCT, Linwood - Chessid Medical Center, Rockville Center, N.Y.

9:35—*Standing Bars*—Roy H. Nyquist, M.D., Ernest Bors, M.D., Rudy Jahn, CCT and James Sheridan, CCT, VAH, Long Beach, Calif.

9:50—*Motivation of Catatonic Patients*—Geraldine Hoseason, CCT, West Los Angeles, Calif.

10:15—*Work Therapy for the Handicapped*—Julian Vogel, CCT, Chief, CT, VAH, Waco, Texas.

10:30—*Forum on School Corrective and Adapted Physical Educators.* Moderator: Donald S. MacKinnon, M.D., Director, Student Health Service, UCLA.
Correctives for P. E. Majors—Walter Crowe, Ph.D., Head, Dept. P. E. for Men, Long Beach State College.
Elementary Schools — Virgil Fornas, Supervisor, Elementary School Corrective P. E., Los Angeles City School Dist.
Secondary Schools—Harold J. Brenner, CCT, Corrective P. E. Instructor, LeConte Jr. H. S., Hollywood.
Preparation for the Profession in School and Clinic—Evelyn Loewendahl, Professor, P. E. Pepperdine College.
Adapted Physical Education in Santa Monica Schools—John Carter, Coordinator, P. E., and Rec., Santa Monica Unified School Dist.
The Long Beach Story—Larry Rossi, Assist. to Supt. of P. E., Long Beach Unified School Dist.
Adapted Physical Education in San Diego—Fred W. Kasch, Ph.D., Prof., P. E., San Diego State College.

9:00—AMRDC (Jupiter and Venus Room)
Treatment and Follow-up Study of a Geriatric Amputee — Carrie Chapman, M.D., Chief, PM&RS, VAH, Oakland, Calif. and Arthur A. Buckley, Coord., PM&RS, VAH, Oakland.

10:30—AMRDC Business Meeting.

9:00—Manual Arts Therapy
Field Trips: Choice of VA Center, Los Angeles, United Cerebral Palsy Center, Los Angeles or Santa Monica Sheltered Workshop.

9:00—Educational Therapy
Field trip to VAH, Brentwood.

12:00—Conference Luncheon—Hotel Garden; Door prizes.

1:00—General Session
Community Resources and Rehab. Centers—Elizabeth Austin, M.D., Director, PM&R, L. A. County Gen. Hosp.
The Employment of the Handicapped—Justin Johnson, Director of Rehab., Hughes Aircraft.
Office of Vocational Rehabilitation Resources—Andrew Marrin, Director, State Dept. of Vocational Rehabilitation.

3:00—Business Meetings, APMR, AMRDC, AART.

THURSDAY — June 16

8:00—Registration; Visit Exhibits.

8:00—APMR
Field Trip to Jerrie Hoseason Studio, Westwood Village for tour and Demonstration of CT, and to Ben R. Meyer Rehabilitation Center of Cedars of Lebanon Hospital.

9:00—AMRDC (Jupiter and Venus Room)
Referrals and Progress Notes—Walter A. Schultz, RRT, Coordinator, PM&RS, VAH, Vancouver, Wash.

10:30—Talk by Carl E. Scott, Assistant Director, Industrial Relations, Radioplane Div. of Northrup Corp.

9:00—AART (West Section, Satellite Room)
E. T. and M. A. T. in the Geriatric Program—Edgar E. Best, RRT, Chief, MAT and ET, VACO, Washington, D. C.

10:30—Educational Therapy (Saturn and Mars Room)
Educational Therapy—Fresent and Future—James W. Lentz, RRT, Chief, CT, VAH, Long Beach, Calif.

10:30—Manual Arts Therapy (West Section, Satellite Room)
Work Therapy in the Soviet Union — George J. Wayne, M.D., Medical Director, Edgemont Hospital, Hollywood.

12:00—Conference Luncheon; Hotel Garden; Door prizes.

1:00—General Session: Carl H. Young, Ed.D., presiding.
Panel:—*Schools and Prevention of Physical and Mental Disabilities—Total Fitness for All*—Lloyd E. Webster, Director, Div. of Health and Physical Education, Office of the Superintendent of L. A. Schools; Harriett Randall, M.D., Asst. Dir., Health Education and Health Serv., L. A. City Board of Education; Dr. Scott, Long Beach City and Public Schools.

3:00—Business Meetings, APMR, AART, AMRDC.

5:00—Cocktails. Hosts: California Chapters.

6:30 Banquet (Satellite Room)

FRIDAY — June 17

8:00—Registration.

9:00—Business Meeting, APMR.

9:00—Business Meeting, AMRDC.

9:00—AART.
Policies and Procedures—Edgar E. Best. RRT, Chief, ET and MAT, VACO, Washington, D. C.

10:30—General Meeting.

1:00—Business Meetings, APMR, AART, AMRDC.

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NORMS FOR THE TOTAL PROPORTIONAL STRENGTH TEST

PHILIP J. RASCH, Ph.D.

WILLIAM R. PIERSON, Ph.D.

EUGENE R. O'CONNELL, M.A.

M. BRIGGS HUNT, Ed.B.

The corrective therapist who desires to record objectively the physical improvements made by his patients as they progress through the Department of Physical Medicine and Rehabilitation usually measures changes in strength and in cardiorespiratory condition. In the former event he encounters difficulty in finding norms for healthy adult males with which he may compare his patients' scores. Larson and Yocom (1) have commented that "adequate strength norms represent a real need," and have pointed out that among the weaknesses of the present strength norms are: (a) an average value is used as a norm rather than more finely divided statistical units, and (b) the total index score is normed, but the individual items comprising the test are not.

Perhaps the most widely used measure of strength is Cureton's Total Proportional Strength Test (TPS) (2). This consists of the sum of four items: right grip, left grip, back lift, and leg lift, which Cureton considers "may be considered proportional to the total strength" and undoubtedly correlates very highly with it. These scores are said to be practically unrelated to cardiovascular measurements, respiratory condition, or metabolic rate, but highly associated with motor performance (2).

More useful than the raw scores of this test is the concept of strength scores divided by the body weight. While a smaller man does not possess the sheer brute strength of a larger man, he does not need as much strength in order to move his smaller body mass with equal or greater effectiveness. "Strength per pound of weight," says Cureton, "is a way of emphasizing the strength according to the needs." For the "before and after" comparisons employed by the corrective therapist, the strength/body weight figure is definitely the more valuable.

Cureton offsets Larson and Yocom's first criticism by providing a table in which TPS scores/body weight are displayed. These scores are shown as raw data, as standard scores, as percentile scores, and as converted to a classification scale. It is the purpose of the present paper to make a contribution to meeting their second criticism by providing norms for each item of the TPS test.

The TPS test was administered to 86 healthy adult males, evenly divided between athletes and non-athletes. Eighty-five of these men were Caucasian, one was a Polynesian. Grip strength was obtained by means of a Jamar Adjustable Grip Dynamometer and leg and back strength by means of a Tieman & Co. Dynamometer. Subjects were positioned so that there was an angle of 156 degrees between the femur and the spine at the start of the back lift (3), and of 120 degrees between the femur and the lower leg at the start of the leg lift (4). These postures appear to be fairly critical, and the results of such tests may be legitimately compared only with scores obtained under similar conditions. The raw scores for the total figure and for each individual item were divided by the body weight. Since a random population does not contain 50 per cent athletes, the resulting figures thus obtained may be somewhat higher than would otherwise be true. However, it should be noted that Cureton recorded a mean of 5.86 with a standard deviation of .97, which compares closely with our mean of 5.39, with a standard deviation of 1.17.

The classification, strength/weight, T scores, and percentiles derived from the data collected from our 86 subjects are displayed in Table I. Since this table provides a norming of the individual items comprising a standard strength test, it should be of practical use to those employed in physical medicine, and rehabilitation, physical education, adapted sports, and corrective exercise.

Report No. 60-43, College of Osteopathic Physicians and Surgeons, and the Department of Physical Education, University of California at Los Angeles, California.

REFERENCES

1. Larson, Leonard A. and Rachael Dunaven Yocom, *Measurement and Evaluation in Physical, Health, and Recreation Education*. St. Louis: The C. V. Mosby Co., 1951, p. 83.
2. Cureton, Thomas Kirk Jr., *Physical Fitness Appraisal and Guidance*. St. Louis: The C. V. Mosby Co., 1947, pp 356-385.
3. Marker, R. M., Analysis of the Thigh Flexor Muscular Strength with Relation to Lumbar Curvature and Athletic Ability. Unpublished Master's Thesis, Springfield College, 1939, cited by Cureton, *op cit.*
4. Carpenter, Aileen, A Study of Angles in the Measurement of the Leg Lift. *Research Quarterly*, IX:70-72, October, 1938.

	RIGHT GRIP			LEFT GRIP			BACK LIFT			LEG LIFT			TOTAL PROPORTIONAL STRENGTH		
	Strength/ Weight	T-Score	Percentile Score	Strength/ Weight	T-Score	Percentile Score	Strength/ Weight	T-Score	Percentile Score	Strength/ Weight	T-Score	Percentile Score	Strength/ Weight	T-Score	Percentile Score
Excellent	.92-1.02	73-100	99-100	.91-1.00	73-100	99-100	2.70-3.05	68-100	97-100	3.61-4.07	70-100	97-100	7.64-8.54	73-100	99-100
Very Good	.85- .93	63- 73	91- 99	.83- .91	68- 73	97- 99	2.35-2.70	59- 68	83- 97	3.15-3.61	66- 70	94- 98	6.74-7.64	66- 73	94- 99
Above Average	.76- .85	56- 63	72- 91	.74- .83	56- 68	72- 97	2.00-2.35	50- 59	50- 83	2.29-3.15	51- 66	53- 94	5.84-6.74	53- 66	63- 94
Average	.67- .76	48- 56	43- 72	.66- .74	51- 56	55- 72	1.64-2.00	42- 50	21- 50	2.23-2.29	50- 51	51- 53	4.94-5.84	45- 53	29- 63
Fair	.58- .67	42- 48	22- 43	.57- .66	43- 51	23- 55	1.29-1.64	36- 42	08- 21	1.77-2.23	45- 50	30- 51	4.04-4.94	41- 45	17- 29
Below Average	.50- .58	38- 42	12- 22	.49- .57	38- 43	12- 23	.94-1.29	27- 36	01- 08	1.31-1.77	40- 45	15- 30	3.14-4.04	32- 41	03- 17
Poor	.41- .50	30- 38	02- 12	.40- .49	30- 38	02- 12	.59- .94	- 27	- 01	.85-1.31	30- 40	02- 15	2.24-3.14	27- 32	01- 03
Very Poor	0 - .41	0- 30	0- 02	0 - .40	0- 30	0- 02	0- .59	0-	0-	0 - .85	0- 30	0- 02	0 -2.24	0- 27	0- 01
Mean	.685			.646			1.893			2.168			5.390		
S.D.	.294			.121			.191			.987			1.172		

TABLE I

Dynamic Strength/Body Weight Norms
(N = 86)

MEASURING INSTRUMENTS FOR AMBULATION AIDS: THE AMBULAIDOMETER

RALPH F. HOOKER, C.C.T.*

MANFRED R. M. BLASHY, M.D.**

Taking anatomical or functional measurements with a high degree of validity is still a difficult task which often yields not very satisfactory results. The ideal goal of 100% accuracy is often unattainable; compromises with approximations are not infrequent. To some extent, experience has to be substituted for objectivity. Although in itself a compromise of practicality with principle, it can produce a considerable degree of at least relative validity as any therapist can demonstrate who has been doing manual muscle examinations, for example, constantly through the years.

The problem becomes more complicated when one considers that minute changes in a given measurement might become so vitally important that their discovery and correction means literally the difference between good and ill health. We have seen, for example, low back syndromes causing misery for years, one of the more recent ones being a woman in her mid-forties, the high-strung and irritable wife of a physician friend. She had pain in her left sacroiliac region on pressure and motion with muscle tightness in the left erector and gluteal group. Symptoms had begun 15 years before. X-rays had been consistently negative for joint or bone disease as well as trauma. She walked with a slight limp favoring the left leg. She had given up all sports she loved. At the time she was seen, she had been undergoing psychotherapy for over a year for her supposedly psychosomatic back pain! Apart from the findings mentioned, her left leg was found to be ¼-inch shorter than the right. After this was compensated for with a corresponding heel pad, the syndrome disappeared within a month; she returned to tennis, golf and skiing a few months later without recurrence (follow-up of 3 years) of symptoms.

Similarly, it was not quite a year ago that we saw a severe crutch paralysis of both upper extremities which was caused by too long crutches and aggravated by the omission of proper crutch ambulation training. Fortunately, correction was accomplished with orthokinetic therapy within a few weeks (1).

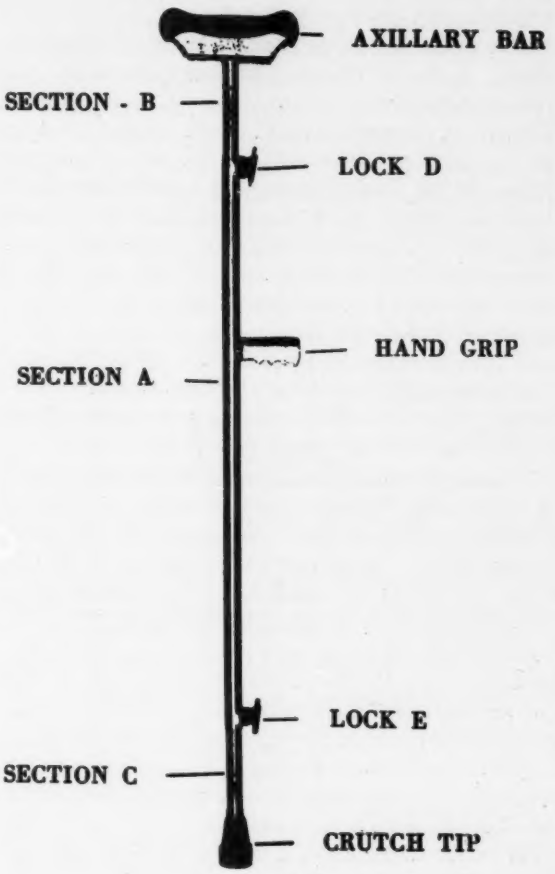

FIG. 1

Such cases are stern reminders of our responsibility for accuracy in measurements, notwithstanding the fact that the human anatomy, for all its harmony and perfection, lends itself poorly to objective standards. Indeed, we feel that the relativity and subjectivity of many of our common measurements is a particular challenge to meticulosity in applying them as well as to ingenuity of improving upon them wherever possible.

With this in mind, a measuring device for ambulation aids is being described, the ambulaidometer. It affords the therapist an instrument of accuracy, safety and speed. By adapting it to the ever different rela-

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tive proportions of any given patient using it directly on him, it eliminates all other measuring devices, doubts and guesswork. It was developed by one of us (R.F.H.) in a cooperative project with our Brace Shop (2). It has been in use now for over a year and has shown itself to be highly satisfactory. It makes possible correct measurements for those with walking casts, built-up shoes, postural deviations and spinal abnormalities among others.

The ambulaidometer is made in three sections, as shown in Fig. 1. The main section (section A) consists of seamless steel tubing, 36" long, 1" in diameter with a wall thickness of .049". Three pieces are welded to the tube approximately in the same (sagittal) plane: At the junction of the upper and middle third, there is a hand grip, 4" long and made of ¾" conduit, rubber covered. At each end of the tube, there is attached a T-lock. Both are fabricated from ⅜" x 1-16" cold rolled steel, bent to a ½" square. The square is welded over a cut-out in the tubing, and a 5-16" nut is welded to the square. A T-bolt fits into the corresponding thread of the nut. A floating aluminum block contoured to the circular inside tubing is used inside of the square as a pressure block.

The top section B consists of seamless steel tubing, 18 inches long, 7/8-inch outside diameter with a wall thickness of .049", so that it fits snugly into the main section. A ⅝" x 3/16" cold rolled steel bar is welded to the top, of the tubing,. A wooden crutch auxiliary bar rubber cushion is bolted to the bar.

A steel tube identical with section B represents the bottom section C, except that it is tapered at one end and carries a rubber crutch tip instead of the steel bar with the axillary cushion as section B does. It slides into the main section in the same manner as section B. It is important to note that both section B and C are calibrated to ¼-inch.

For increased accuracy, it is recommended that the ambulaidometer be used in pairs. Thus, an arrangement becomes possible of placing the T-locks in a 30° angle medially from the position of the hand grip which, in reference to the patient, is in the sagittal plane as mentioned.

Taking measurements with the ambulaidometer is as follows: The patient should be standing in the upright position on a smooth, even surface using wall or parallel bars to assure his balance. His body should be as erect as possible and his head up, looking forward. The therapist places the ambulaidometer in the hand of the patient who holds it at the hand grip with elbow joint extended. At this point, both sections B and C should be telescoped into section A so far that the total length of the instrument is not more than 48"; both T-locks should be tight.

Now the therapist takes the measurement for the axilla with section B, opening T-lock D about ½ round, pushing section B out to approximately three fingers' width below the armpit at the thorax wall. He re-tightens the T-lock. Then, he measures section C, opening T-lock E and placing the tip of the instrument on the floor between 3" to 6" forward, and 3" to 6" to the side of the toes (this distance will vary according to posture and balance requirements). He has the patient lean forward slightly after re-tightening lock E.

After both of these measurements have been taken, the ambulaidometer is applied to the other side or (and we prefer this) the second instrument is so applied and its measurements taken in the same manner. The ambulaidometer (s) now give (s) the exact fitting position which can be noted on the calibration. Each instrument is then taken to a table and placed on the crutch the patient is to use. Each is adjusted to the respective instrument with exact placement of hand grip, upper and lower length in the accurate proportions indicated by each "model." If the hand grip of the ambulaidometer happens to fall between the adjustment holes of the crutch, we adjust the crutch handle upward. We compensate for this in moving the lower piece also or by cutting off the corresponding length at the tip of the crutch.

Measuring with the ambulaidometers in this fashion requires usually not more than 60 seconds, often less, and the crutch adjustments a similar time period. If elbow flexion is specifically wanted or indicated, a fixed protractor (3) should be used for correct angulation. Most of our patients crutch walk with elbows extended, especially those who will use crutches only for a relatively short time. With elbow flexion, the patient of course is able to lift his weight higher by straightening his arms and depressing his shoulders which aids, for example, in walking stairs or in a swing-through gait.

It should be noted that patients can also be measured with ambulaidometers in the supine position using a board at the feet. Likewise, other ambulation aids such as invalid walkers or Lofstrand crutches can be fitted in a similar manner with the same ease and accuracy.

ACKNOWLEDGEMENTS

We wish to express our appreciation for the splendid cooperation of other therapists in this project, but especially to William J. Potter of the Brace Shop for fabricating the ambulaidometers; also to Floyd Willard, chief of the medical illustration service, for the picture material.

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STUDIES IN CLINICAL PHYSIOLOGY OF EXERCISE, V

PHYSICAL FITNESS AND SUSCEPTIBILITY TO INFECTIONS

(THE NORTHWEST KASHMIR EXPEDITION OF THE BRITISH ARMY MOUNTAINEERING ASSOCIATION IN 1959)

ERNST JOKL, M. D.*

In the *Lancet of* April 9, 1960, P. G. Horniblow (1) reported of medical experiences with 12 European members of the expedition undertaken jointly during the summer of 1959 by the British Army Mountaineering Association and the Pakistan Army to climb and explore a remote area in northwest Kashmir called Baltistan. All the men were superbly fit and experienced climbers.

Three members of his party suffered from "high altitude throat." They became afflicted at heights over 16,000 feet and had to be treated with sulphonamide. All gave histories of sore throats on previous occasions, and the suggestion is made that prospective climbers should have a throat-swab taken, and if culture shows pathogenic organisms be given a suitable antibiotic. Tonsillectomy may be necessary before a man is considered fit to join a party planning to climb a high peak.

It is stressed that the possibility of early pulmonary tuberculosis being present must not be ruled out solely because of the high performance capacity of the subjects. For this reason alone, chest x-rays were taken before the team's departure. Also, experiences during previous expeditions showed that some of the climbers become susceptible to lobar pneumonia at high altitudes where it may prove rapidly fatal despite the most energetic measures. The importance of excluding predisposing causes of this illness prior to the ascent is therefore apparent (2).

All men were given typhoid, anti-typhoid and cholera protection before embarking for the trip. However, gastroenteritis was a frequent hazard, and the mountaineers became afflicted within a week of arrival in Asia. The condition is often nonspecific and has been attributed to the reaction of normal paracolon organisms to the change in environment. "We were all inconvenienced to a greater or lesser extent." Rest and glucose saline solution proved effective.

Superficial cutaneous infection posed an important problem. A tendency for small cuts and abrasions to become septic was noticed however quickly sterile dressings were applied. Despite the use of antiseptic lotions and antibiotic applications, purulent discharges persisted in several cases. Fungus infection of the feet was encountered repeatedly, tinea pedis being identified as the causative micro-organism.

Horniblow recommends that on returning home the climber should submit stools for examination. Bacillary dysentery, amoebiasis and ascariasis are likely to infect many a mountaineer in the Himalayan foothills.

Evidently, the 12 sportsmen who ventured into the high mountain area in northwest Kashmir were extraordinarily well-trained. However, their great performance potential was not reflected in a corresponding strengthening of resistance towards infectious diseases. Prophylaxis against and treatment of epidemiological conditions of all kinds call for precisely the same measures whether or not the subjects are physically fit (3, 4).

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DESCRIBE DISEASE SIMULATING TB

A tuberculosis-like disease, probably more widespread in the United States than has been realized, was reported to this year's Veterans Administration-Armed Forces Conference on Chemotherapy of Tuberculosis. So closely does the lung disease simulate TB that diagnosis depends on special laboratory identification of the infecting microbes, said Dr. Daniel E. Jenkins, Dr. David Bahar, and Dr. Irving Chofnas of Baylor University College of Medicine and the Houston, Texas, VA hospital.

The doctors said that persons infected with the microbes may have negative or weakly positive reactions to the standard tuberculin test, in contrast to the practically 100 percent positive reactions in patients with tuberculosis. However, they react strongly as a rule to tuberculins prepared from the specific microbe with which they have been infected. Symptoms, lung lesions, and other physical signs are identical with those of TB.

Unlike tuberculosis, however, there are so few instances of more than one case of the disease in a family as to suggest that the mechanism of spread of the infection differs from that of TB, the doctors said.

The Texas research group said a considerable percentage of the as yet unclassified microbes causing the disease are resistant to many of the anti-tuberculosis drugs. This makes the disease difficult to treat, but good results have been obtained by surgery for the lung cavities, they added. The doctors said many of the hospitalized patients have advanced infection, and deaths from the disease have been reported. Laboratory workers throughout the world are attempting to identify and classify the various groups of microbes involved.

THE ROTOMETER AND ITS USE BY DISABLED STUDENTS*

C. M. TIPTON

D. M. HALL

During the past 20 years those in charge of the 4-H Keeping Fit Program (1) in Illinois have carried on a never ending search for newer and better equipment to appraise the physical efficiency of youths. Recently a new machine called the Rotometer was built (Fig. 1) in accordance with the principles of the prony brake (2). The force is transferred through a lever arm to a sylphon bellows containing hydraulic brake fluid. The movement of the fluid is dampened through a small orifice before it reaches a pressure gauge. This allows a minimum of dial fluctutation while permitting the gauge to become stabilized with one revolution of the drum. The machine was calibrated by the University of Illinois Electrical Engineering Instrument Laboratory. A ratio of 3.7 to 1 exists between the force applied and the force recorded. A battery operated microswitch records each revolution turned. The operator arbitrarily determines the brake resistance, according to the sex, age and size of the subject. Thus we know the factors of load, revolution and time and can express the results in units of torque, revolutions, revolution-pounds, and power.

Although similar machines have been built (3, 4) this paper describes our methods for testing this machine and then describes its usefulness in reconditioning disabled students.

Our first problem was to determine which muscle groups were involved in Rotometer performance. We secured the assistance of Dr. A. W. Hubbard and O. K. Karr of the Sports Psychology Laboratory in measuring the action potentials of the arms and shoulder girdle. Recordings indicated the following muscles were active at some point in the rotation of the brake drum: (a) trapezius (lower portion); (b) latissimus dorsi; (c) pectoralis major; (d) deltoid (anterior, middle and posterior); (e) biceps, and (f) triceps.

Repeat reliability (r=.914), (N=71) indicate the results are reproducible. Correlation coefficients with five weight lifting events show that less than one-half the variance is common to Rotometer foot-pounds and weight lifting (Table 1).

Berger (5) found rotometer performance before and after training for bench press endurance was significantly different at .01 level with 15 subjects.

*From College of Agriculture, University of Illinois, Urbana.

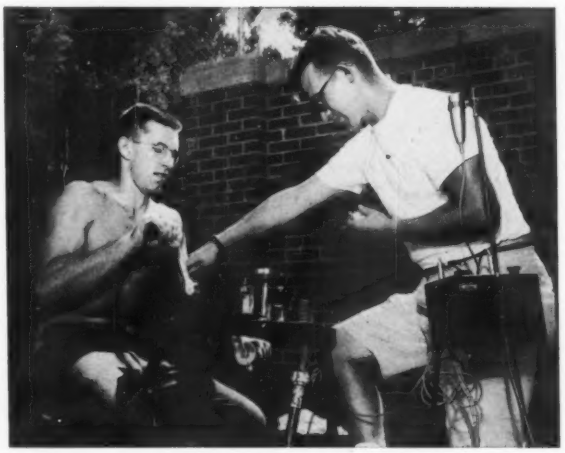

FIG. I

Event	N	r Rotometer x weight event
Clean and jerk	21	0.752
Snatch	21	0.725
1 Military press	21	0.706
5 Bench presses	17	0.641
5 Curls	19	0.777

TABLE 1

Studies Involving Disabled Students

The University of Illinois Student Rehabilitation Center is unique in that it provides facilities to disabled students. To meet the requirement for two years of physical education, a registered physical therapist* supervises an adaptive physical education program.

The Rotometer was introduced to measure any gains in strength and endurance of these students. Students participating in these studies were wheel chair students who had no residual paralysis and who had been classified as being 4-plus or better according to procedures advocated by Daniels, Williams and Worthingham (6). Since this is a subjective rating each subject was asked to lift a 15 pound weight in positions requiring the actions of only the flexors and extensors of the forearm. All but one passed this test. The one subject who failed was able to lift 12 pounds with the extensors of the left arm, so was included within the study.

*Charles D. Elmer

Measurement	Reliability
Shoulder width	0.967
Upper arm length	0.876
Forearm length	0.831

TABLE 2

Since the Rotometer test is conducted in a sitting position, sitting height was controlled by means of a platform that adjusted the height of the acromium tip to the height of the upright crank handled to within ±.5 inch. Anthropometric measurements were taken according to the reference points advocated by Martin (7) and are shown with their reliability coefficients (N=24) (Table 2).

	Subject T.J.		
	Before	After	Change
Rotometer revolutions	45	52	15.6
Flexors, right, lbs.	47	50	6.4
Flexors, left, lbs.	44	44	0.0
Extensors, right, lbs.	43	53	23.3
Extensors, left, lbs.	44	52	18.2

Subject C.S.		
Before	After	Change
34	54	58.8
46	46	0.0
46	53	15.2
40	40	0.0
35	39	11.4

TABLE 3

Zero order correlations between these measurements and the number of revolutions turned on the Rotometer in .5 minute with an 8 pounds resistance were low. The multiple R when the three were combined was .684 (8). Since the machine was not very effective in testing anatomical differences, we assumed that it must be testing muscular responses.

To determine the nature of muscular changes produced, two disabled students fulfilled their therapy requirements by training on the Rotometer at different resistant levels for an eight week period. Before and after scores are shown in Table 3.

Maximum flexor and extensor isotonic strength was determined by the supervising physical therapist and the writers in accordance with standardized muscle testing procedures. The Rotometer revolutions were determined for .5 minute at 8 pounds resistance.

The Student Rehabilitation Center aims to increase the students' muscular fitness level with activities supervised by the therapists. Students devote much of their corrective physical education time to such events as weight lifting, pulley exercises, passive resistance exercises, stretching of contractures, postural exercises and practice of functional skills such as getting in and out of a chair and car. Disabled students differ in muscular fitness. On the one hand some are almost helpless; on the other, there is the example of the nationally famous wheel chair basketball team known as the "Gizz Kids."

It was postulated that these differences could be measured by the Rotometer. Consequently, we formed three groups of students on the basis of their activities: (A) Daily living activities plus corrective physical education activities; (B) Daily living activities plus basketball activities; (C) Daily living activities only.

The A group did the exercises described above. The B group substituted basketball for corrective physical education activities. The C group had fulfilled its corrective physical education requirements and performed no regular activities other than those needed for daily living.

Students from each group were tested on the Rotometer before and after a 10 week period. The data in Table 4 shows the gains made. An analysis of variance test shows no significant differences at the .05 level (9). This result is not surprising because daily living could not be standardized between the groups. Furthermore, the basketball group had reached its competitive playing period before the measures were taken. However, the gain observed by person 3 in the basketball group was a person who joined the squad late in the season. Two students in the therapy group made gains of 54 and 200 percent respectively. Usually new students enter in poor condition and would be expected to make gains.

Exercise Alone	Before	After	% Change
Group A = Exercise (N 4)			
(1)	35	46	31.4%
(2)	28	34	21.4%
(3)	38	45	18.4%
(4)	45	54	20.0%
Means	36.5	44.8	22.8%
Group B = Basketball (N 4)			
(1)	37	39	05.4%
(2)	48	55	14.6%
(3)	30	46	53.3%
(4)	41	44	07.3%
Means	39.0	46.0	20.2%
Group C = Control (Daily Living Activities only) (N 4)			
(1)	43	48	11.6%
(2)	42	45	07.1%
(3)	37	34	-08.1%
(4)	31	32	03.2%
Means	38.3	39.8	+3.5%

TABLE 4

Discussion

The data suggest that the Rotometer can produce and measure muscular gains. Furthermore, the score which immediately showed their performance motivated the students. This was much in evidence by the eagerness of the severely handicapped adults attending the 1957 Cerebral Palsy Camp at Lock Port, Ill., to use the machine.

At the present time the Rotometer is being used as a work machine to produce heart beat acceleration

(Continued on Page 81)

THE EFFECT OF LOCAL ISOMETRIC MUSCULAR ACTIVITY ON LOCAL SKIN TEMPERATURE*

EUGENE R. O'CONNELL

Introduction

The direct measurement of heat liberated in muscular activity is difficult. Since the use of needle electrodes is limited to the medical profession, surface electrodes are the only technique available to the corrective therapist or physical educator. This indirect method involves many variables. The importance of measurement of heat liberation is related to its effect on the maximum physical performance of the patient and of athletes. It is recognized that a "warm up" period will increase muscular temperature and improve performance (1). Just how much temperature rise results from standardized exercises and to what degree this increases performance are not known.

Review of the Literature

In this paper the thermodynamic aspects of muscular contraction are considered only to the extent that the surface measuring instruments available to the corrective therapist and physical educator will permit. The measurement of skin temperature has been covered at great length by Burton (2), who describes three electrical instruments for this purpose: the thermocouple, radiation thermopile, and resistance thermometer. Clark and Trolander (3) devised and tested a thermistor thermometer whose electrical resistance changes in accordance with small changes in temperature. It is designed to include a range of temperature changes from 68 to 113 degrees Fahrenheit. The temperature sensitive themistor element is mounted in the end of a wire and sealed so that it is waterproof. The electrical circuit used consists of a balanced Wheatstone bridge.

Burton (2) considers that the key to the interpretion of changes in skin temperature is the separation of physical from physiological factors. Physical factors relate to the room temperature, humidity, and the type of clothing worn. Physiological factors reflect the state of general vasoconstriction or vasodilation, which depend on the past history of exercise, eating, and even emotional states. Heat flows from the interior of the body, where it is generated, to the surface, and is then dissipated into the environment. The law of diffusion of heat determines the rate of this flow. Changes in thermal conductivity of the tissues are due mainly to changes in blood flow.

Other factors, such as blood flow in the muscles, also effect skin temperature, for this represents a large portion of the total circulation of the limb. Another major factor is "thermal lag," *i.e.,* the time taken for heat to be diffused from the interior to the surface of the body, which is exhibited in skin temperature when change is taking place within the interior. In vasodilation the temperature may rise rapidly taking only a few minutes to reach a final level. In vasoconstriction, when there is a drop in skin temperature, the lag will be greater because there is no circulation at the surface allowing for the dissipation of the heat into the environment. Another factor is the effect of evaporation. The rate of this depends on the wetness of the skin, the humidity of the environment, and the temperature (2).

The measurement of human skin temperature as effected by muscular activity was investigated by Benedict and Parmenter (4). Twenty-six healthy normal women subjects participated. A thermocouple was used to determine the temperature changes. In one instance the investigators found that physical activity involving running up and downstairs in a building of 20° C. caused a decrease in average skin temperature. In another instance walking on a treadmill at 2 miles per hour and a 17 per cent grade for 5 minutes caused a distinct drop in average skin temperature. The authors suggest the hypothesis that this decrease in skin temperature resulted from a temporary transport of blood from the periphery to the muscles.

Burton (5) studied changes in skin temperature during exercise by the use of a resistance thermometer which was designed to give a continuous record of the temperature over an extended area, such as the trunk or leg. The exercise was performed and measured for a 15 minute period on a bicycle ergometer. A resting level of skin temperature was established while the subject was sitting for 10 minutes on the ergometer. Immediately after exercise the temperature rose .2° to .3° C. in less than a minute. The temperature remained constant for 6 to 8 minutes, when it then began to fall. The conclusions reached in this study indicate that during muscular exercise there is an initial tendency for the skin temperature of the trunk and leg to rise. The rise is quickly halted and followed by a fall in temperature which corresponds to the subjective sensation of sweating. The

*Human Performance Laboratory, Department of Physical Education, University of California, Los Angeles.

evidence suggests that this fall is due to the cooling by evaporation of sweat.

Such activities, of course, are examples of vigorous big muscle isotonic work. It is not evident whether the conclusions drawn from them are also applicable to the local effects resulting from local isometric exercises. In view of the great amount of interest which has been aroused in isometric exercise during the last few years (6) it appeared desirable to determine whether the changes of skin temperature following local exercises of this nature are similar to those following generalized isotonic activity.

Procedure

The experimental method in this study was designed to determine the effect of isometric contraction on skin temperature over the belly of the forearm flexor muscles in normal healthy men and women of college age. Twenty-four subjects including 17 men and 7 women participated. The right arm of each subject performed the exercise; the left arm remained at rest throughout the exercise program and functioned as a control. Left and right arm skin temperature readings were observed and recorded by means of a thermistor thermometer similar to that described by Clark and Trolander. The measurements were made before, immediately after, and 3 minutes after exercise, a 3 minute post-exercise period being considered long enough to compensate for thermal lag. The room temperature was kept as even as possible, with the temperature averaging 80° F. The subjects were told not to participate in any vigorous activity before coming to the experiment. They remained at rest for several minutes before starting their exercise.

The subject sat erect in a comfortable position on a low bench approximately 12 inches in height in front of a table of 30 inches in height. A Triplett Model 420 Strain Gage dynamometer apparatus was attached to the top of the table. The exercise consisted of 30 maximal isometric contractions performed in a 60 second period; a maximal isometric contraction every 2 seconds. A metronome was used to pace the subject. The dynamometer apparatus was set up to permit the greatest leverage advantage for the subject. The angle of pull on the apparatus by the subject formed a perpendicular or 90 degree angle with the forearm. The right elbow rested in a padded cup fastened to the table top directly below the wrist of the subject. The left arm of the subject lay on top of the table in a relaxed position with the palm of the hand facing up.

A Multi-lead Electro-Medical Engineering Company Thermistor Thermometer with surface electrodes was used to observe the skin temperature measurements. A thin rubber band held the electrodes next to the skin over the belly of the left and right biceps. When the room temperature and the resting level skin temperatures were recorded the exercise program for the right arm was started. After 30 maximal isometric contractions in 60 seconds the exercise was terminated and a second temperature reading observed and recorded for the left and right biceps. At the end of the three minute resting period a third temperature reading was observed and recorded. This procedure was repeated on a subsequent occasion yielding two separate but identical experiments. The data obtained from these investigations is summarized in Table I.

FIRST EXPERIMENT

Temperature (deg. F.)

	Right Arm (Exercise)	Left Arm (Control)	Diff.	Sig.
Before Ex.	94.35	94.19	.16	NS
After Ex.	94.69	94.33	.36	NS
3 Min. After Ex.	95.54	94.54	1.00	SIG.

SECOND EXPERIMENT

	Right Arm (Exercise)	Left Arm (Control)	Diff.	Sig.
Before Ex.	92.78	92.83	.05	NS
After Ex.	93.33	93.06	.27	NS
3 Min. After Ex.	94.50	93.37	1.13	SIG.

Mean Differences of Skin Surface Temperature in Exercise and Control Arms

TABLE I

Results

The data were analyzed by the use of Fisher's "t." No statistic was considered significant unless the chance probability of such a statistic was .05 or less.

As can be seen in Table I, there were no significant differences between pre-exercise skin temperatures of the right arm and left arms in either experiment. No significant differences appeared immediately after exercise in either experiment. However, 3 minutes post-exercise significant differences were observed between the skin temperatures of the right and left arms in both experiments.

Discussion

Evidence of a thermal lag can be seen in examining the mean temperature observations. The temperature increase of approximately 1° F. occurred in the 3 minute period immediately after exercise, whereas no change had occurred during the one minute exercise period. As Barcroft and Millen (7) observed, the blood flow to the muscles is restricted during a strong contraction. This internal occlusion is believed to be the result of the squeezing action of the muscle fibers as they contract around the blood vessels. When the

(Continued on Page 81)

A.P.M.R. for Office

The nominating committee of the Association for Physical and Mental Rehabilitation, Carl B. Peterson, chairman, has announced the following slate of candidates for election by the General Assembly at this year's annual meeting in Santa Monica, Calif. The office of First Vice President, formerly filled by election of the General Assembly, is no longer a responsibility of that body. A 1959 change in the By-Laws provides for election of First Vice President by the Board of Governors and accession to the Presidency one year hence.

The following thumbnail sketches have been provided to acquaint the membership with the nominees:

For Second Vice President

David Ser, New York, N. Y.
Richard G. Fowler, Los Angeles, Calif.

For Third Vice President

Julian Vogel, Waco, Texas
Kenneth J. Thornton, Franklin Park, Ill.

For Secretary

John B. Murphy, Chillicothe, Ohio (unopposed)

For Treasurer

Vincent J. Oddo, Chicago, Ill.
Bernard H. Weber, Los Angeles, Calif.

David Ser

Serving at present as First Vice President and chairman, public relations committee . . . A charter member of the Eastern States Chapter, he served on its executive board for several years . . . Graduate of New York Univ., he has completed work for his Master's degree . . . At present Chief, CT, at the New York VAH.

Julian Vogel

Graduate of Fordham Univ., he has done graduate work at Washington & Lee and the U. of Texas . . . Chairman, APMR nominating committee, 1959; former president, Texas - Lousiana chapter . . . As Chief, CT at VAH, Waco, Texas, he has received nine VA suggestion awards . . . This year he received the "Outstanding Corrective Therapist Award" presented by the Texas-Lousiana chapter.

Vincent J. Oddo

Serving at present as Treasurer, he has been a member of the CT staff at VAH, Hines, Ill. for ten years . . . Graduate of De Paul Univ. . . . Has served for eleven years as Chief Administrative Officer, U. S. Naval Reserve with rank of Lieut-Commander.

VA SETS UP DATA PROCESSING STAFF

Establishment of a data processing staff in the Veterans Administration Department of Medicine and Surgery, Washington, D. C., has been announced by the VA. Director of the staff is Dr. Milton I. Schwalbe, who was transferred from the position of director of professional services of the Manhattan VA hospital in New York City. The staff, directly responsible to the VA Chief Medical Director, will plan, develop, and coordinate integrated automatic data processing applications involving administrative activities for the Department of Medicine and Surgery and on a VA-wide basis. It also will implement and stimulate action on applications of ADP as an aid to clinical activities and medical and dental research.

Dr. Schwalbe's staff is designing an agency-wide ADP system encompassing fiscal management, supply management, pay administration with related personnel statistics, and medical administrative operations and related statistics.

The VA Chief Medical Director, Dr. William S. Middleton, believes there is a high potential for application of ADP to medical research and clinical evaluation.

Dr. Schwalbe, a diplomate of the American Board of Urology, has experience in engineering and physics as well as medicine and is the author of many publications in the fields of urology and medical electronics.

Candidates

1960—61

John B. Murphy

This year's Secretary, he also doubles as Editor of the association *Newsletter* . . . Received B.S. degree from Ohio State; later served as coach and athletic director in secondary schools . . . Entered CT in 1953 as staff therapist at VAH, Chillicothe, Ohio.

Bernard H. Weber

Graduate of Washington State, he has done graduate work at UCLA . . . Served 5 years in the Infantry and Military Police during WW II, being discharged as Ist Lieut. . . . Entered CT in 1947 and at present is assistant chief and training supervisor in CT at the Wadsworth division of VAC, Los Angeles . . . Has served twice as president, California Chapter; is chairman, exhibits committee for both APMR and the Santa Monica conference.

Richard G. Fowler

Serving at present as Third Vice President . . . Graduate of Kansas State in 1935, he taught and coached in Kansas high schools for several years . . . Served with U.S. Army Infantry Reconditioning program in Europe during WW II . . . For past 13 years has been on CT staff at Los Angeles VA Center's General Hospital's CT staff; Chief CT since 1956 . . . Past president, Calif.-Nevada Chapter; national treasurer and membership chairman, 1950.

Kenneth J. Thornton

Graduate of Univ. of Illinois . . . Spent three years in the Army during WW II and at present is a Captain in the Reserve . . . A former CT he served on the staff at Wood, Wisc. for six years . . . Moved into the adapted physical education field in 1956 where he teaches in secondary school.

EVALUATE SURGERY FOR CORONARY DISEASE

A large-scale cooperative study of surgery for coronary heart disease has been started by the Veterans Administration, the agency has announced. Dr. Lyndon E. Lee, Jr., of VA central office in Washington, D. C., coordinator of the study, said the combined medical, surgical, and pathologic research is designed to foster development of and to evaluate surgical therapy for coronary artery disease. Sixteen VA hospitals are participating in the initial phase of the study, to evaluate a surgical approach to treatment of angina pectoris. Dr. Lee said the group expects to add other operative procedures to the study in the future. "During the past five years, more than 300 patients have been operated on by various accepted techniques in VA hospitals," Dr. Lee said. "This study involves a review of results, development of a controlled study on procedures, and an intensive effort to develop one or more improved surgical approaches to this widespread disease."

Participating in the study are the VA hospitals at Albuquerque; Des Moines; Buffalo and Syracuse; Coral Gables; Denver; Hines, Ill.; Long Beach; Memphis; Minneapolis; Oklahoma City; Oteen, N. C.; Pittsburgh; Salt Lake City; Washington, D. C., and White River Junction, Vt.

Consultant for the study is Dr. Brian Blades, director of the department of surgery of George Washington University Medical School. Dr. James Hagans of the University of Oklahoma Medical Center in Oklahoma City is biostatistician for the project.

THE EFFECTS OF A PRE-SEASON ANKLE EXERCISE PROGRAM ON THE PREVENTION OF ANKLE INJURIES IN HIGH SCHOOL BASKETBALL PLAYERS*

EUGENE RHODES, M.A.

WAYNE D. VAN HUSS, Ph.D.

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Introduction

Attendance figures exceeding those of any other sport attest to the fact that basketball is one of the most popular sports in our country today. In most high schools throughout the U.S., this game is played on the varsity and/or intramural level. As a result of such wide participation, the incidence of injury, especially those considered as "minor," is high. The most prevalent of all minor injuries incurred in basketball is the ankle sprain (1). Therefore, some method of preventing or minimizing ankle injuries is needed.

Several contradictory theories regarding the prevention of ankle injuries have been presented. The most common of these concerns the use of ankle wraps and tape. Meanwell (2) feels that ankle wraps should be worn both during practice and during games. Heppenstall (3) and other trainers and coaches are in agreement, but many of their counterparts are of the opinion that continual use of wraps tends to weaken the ankle.

Other writers believe that the use of tape is better than wraps. Hansen (4) states that taping the ankle will decrease the incidence of sprain; whereas Thorndike (5) is of the opinion that taping normal joints is not desirable. Instead, he suggests that certain definite joint tone exercise be carried out in the early training season.

Most authors believe the strength of the ankle can be increased by following a program of stretching exercises. Ochsenshirt (6) has found that adolescents in basketball, baseball, and football have shown a reduction in ankle injuries by use of pre-season progressive resistance exercises. Equipment essential to the administration of a progressive resistance exercise program, however, is foreign to most high school coaches due to the initial expense involved. For this reason, the authors attempted to evaluate the effects of an ankle exercise program given as part of the pre-season physical conditioning program utilized by the coach.

*From the Human Energy Research Laboratory, Michigan State University, East Lansing, Michigan.

Ankle Exercise Program

In the establishment of an ankle exercise program, the following two questions must be answered:

1. Do the exercises sufficiently stretch the ankles in the manner intended?
2. Are the exercises of such a nature that they can be incorporated within each coach's pre-season physical conditioning program without requiring additional time for administration?

In order to answer "Yes" to these questions, the authors used the following two exercises as the constituents of their program:

1. *Defensive drill exercise.* The defensive drill is designed to improve footwork and to condition the arms, feet, forelegs, and ankles. In this drill, a designated person (usually the coach) calls out, "Forward, rear, right, left" in any sequence he desires. The players, aligned three deep and ten feet apart, are in a defensive position (hands up, feet spread, knees flexed), sliding in the direction called out by the coach.
2. *Ankle exercise.* The second part of the program has the group responding to the coach once more as he calls out, "Up, back, out, in." This time the group is in a stationary position, going up on its toes on the command of "Up," back on its heels on "Back," bending outward as far as possible on "Out," and bending inward on the command "In."

It was suggested to the experimental group coaches that the above exercises be given out-of-doors the first couple of weeks of the training season, using a cinder track or school yard on which to run. This is preferred due to the "give" in the surface, permitting a gradual conditioning of the legs.

Method

The purpose of this study was to determine the effect of a pre-season ankle exercise program on the prevention of ankle injuries among high school basketball players. An experimental and control group each composed of twenty teams located in central Michigan were selected. For every school placed in the

Measure	EXPERIMENTAL Total Number	Mean	CONTROL Total Number	Mean	Mean Diff.	D. F.	"t"
No. of ankle injuries	52	2.6	38	1.9	.7	38	1.37
No. of games missed	35	1.75	15	.75	1.00	38	2.04
No. of practices missed	147	7.25	72	3.60	3.65	38	3.34

($t_{.01} = 2.72$ $t_{.05} = 2.03$)

TABLE I

experimental group, a school of comparable size and from the same locale was placed in the control group. Only the first 12 members of each team were selected for the sample. The teams in the experimental group were given an ankle exercise which was incorporated within their daily pre-season practices.

A personal interview was held with each of the twenty coaches of the teams in the experimental group five weeks prior to their first scheduled game. At this time, the study was outlined and procedures explained. Fortunately, all twenty of the coaches in the experimental group agreed to cooperate in the study.

About three weeks after the start of practice, letters were sent to the coaches in the control group. They were asked to participate in the study by recording the necessary data during the progress of the season. All twenty coaches contacted agreed to participate in the study.

Record sheets on which to record the injured boy's name, number of practices missed, number of games missed, and type of injury was issued to the coaches of both groups. Any injury to the ankle, with the exception of fracture, that was temporarily disabling, was classified as an ankle injury. Sprains, strains, torn ligaments and dislocations were the most commonly observed injuries falling in this category. If a boy was unable to maneuver at top speed during a game or practice session because of an ankle injury, it was recorded as a game or practice missed. At the end of the season, the coaches were requested to return their record sheets. When all records were received, a personal interview with ten coaches from each group was conducted. The information obtained from these interviews substantiated the data recorded on the report sheets.

Results

The groups were compared on three measures; number of ankle injuries, number of games missed and number of practices missed due to ankle injuries. The data were treated statistically using the "t" test.

Although the experimental group reported fewer ankle injuries than the control group, this difference was not significant. However, the groups differed significantly in both number of games and number of practices missed due to ankle injury. In other words, even though the experimental group did not exhibit significantly fewer injuries, its members were apparently able to maneuver at top speed sooner, and thus missed fewer games and practices. Table I contains the means and "t" values obtained.

Summary

In this study, the authors have attempted to determine the relative merits of a pre-season ankle exercise program in the prevention of ankle injuries in high school basketball players. An experimental group and a control group of twenty teams each were established. The experimental variable was the ankle exercise program incorporated within the experimental group's daily practice itineraries. Records of all ankle injuries, number of games missed due to ankle injuries and number of practices missed due to ankle injuries were maintained. The data were treated statistically using the "t" test to evaluate differences observed in the two groups.

Conclusion

The following conclusions can be drawn on the basis of the results obtained:

1. No significant difference was found between the two groups in number of ankle injuries incurred during the regular season.
2. The exercise program produced a significant difference in number of games missed due to ankle injuries.
3. The exercise program significantly reduced the number of practices missed due to ankle injuries.

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BRIDGES TO UNDERSTANDING

(The Tri-Organizational Conference, 1960)

Conferences offer opportunities for improving human relationships and a chance to formulate primary principles of action which may be utilized in fostering desirable personal social adjustments and career advancement. The gregarious instinct of man causes him to be drawn to the society of those of like interests, and hence conferences are held to discuss topics of meaning and common problems. Such conventions are the result of the *realization* of professional goals brought about by the dedicated efforts of leaders of vision who have sought to accomplish worthy objectives.

Through the inspiring of colleagues and others to make such an investment of time and energies, these leaders make possible the *attainment* of new frontiers. Thus, group thinking may be utilized more fully when those with the same ideals gather together under one umbrella.

The inspiration achieved through such meetings usually motivates the entire membership in attendance, and the young people who are starting their careers are especially susceptible to stimulating ideas. Thus, the professional organization, through this medium, takes on new stature, and these newer members seek to emulate their peers. This is a medium for in-service training, exchanging of research findings, and is one of the major missions of all three participating associations.

Danger of Overspecialization

One of the threats of expansion and growth in numbers within an organization would seem to be the danger of overspecialization. In the desire to offer leadership opportunities to a larger proportion of those interested in the broad area of therapy, the field has been inclined to move toward segmentation with emphasis on specialization. *In this manner we tend to accentuate the differences rather than the similarities of what might be called our common purposes.* We must not lose sight of the parts of the totality, nor the totality of the parts.

One of the problems facing the specialist in therapy who attends our national conferences and wishes to support the various sections related to his emphasis is: how to gain the broad perspective of the total profession at the same time. Jay B. Nash has said, "In any division of work based upon technical skill, the robes of authority in one kingdom confer no sovereignty in another. Because a man is expert in one area, it does not necessarily follow that he is an authority in others."

It must be pointed out, however, that those dealing with some type of specificity have an obligation to understand their part in the whole. This is possible through being able to attend other sessions as well as one's own in order to discover other's place in the total program of educational and medical institutions, and thus see the picture as a whole.

At present there are special sections dealing with various types of work, such as several phases of therapeutics, adapted physical education and body mechanics, recreational therapy, educational therapy, manual arts therapy, physical and mental rehabilitation or corrective therapy, and medical coordination. It is impossible for any one person to take in all of these meetings and still attend sessions of the other cooperating organizations which may attract him.

Team Approach

Since there are commonalities and similarities among these various programs, yet recognizing distinctive functions, it would seem possible that through a combining of efforts we might better focus our direction through a togetherness and thus reach our objective sooner. The advantages of working as a team offsets in many instances the disadvantages which have previously prevailed due to the separation and dividing of closely related areas.

Section programs in some cases are being combined, and, being well planned, are so structured as to attract not only the specialist but those from the entire professional field as well. In this way the total membership of the 1960 Conference may become better informed as to the intertherapy relations and what the intent and functions of the various segments may be. Too often those who have not had favorable experiences from joint section meetings are against the inclusion or combining of efforts and they need to be enlightened as to the opportunities for service through this means.

We need to project our thinking and determine what might seem to be best procedure in the long haul ahead. With *present practices* it would seem that the accomplishment of the main or principal objective is lost sight of through the accentuation of the techniques of minor parts of the whole by the respective Tri-Organizations. *Future needs* would appear as though the reversing of this process would greatly enhance the appeal and value of our national conferences.

The attempt to offer constructive suggestions for a more unified approach to convention program planning pertaining to therapeutic problems, is the result of the expressions of many who in the past have been responsible for arranging sectional meetings. They have often found it to be a most difficult task

to secure outstanding specialists from the field for a program which will offer sufficient attraction to draw sizeable membership attendance, and as you well know an audience is most certainly necessary for successful sectional meetings.

You are urged to attend the Fourth Annual Tri-Organizational Scientific and Clinical Rehabilitation Conference at Santa Monica, California, June 13-17, 1960. You may be certain that the program offers sufficient diversification to appeal to the interests of all. Many attractive entertainment features and interesting visits to nearby facilities have been provided for your enjoyment in a most hospitable setting. The time and money invested in being present should bring outstanding dividends to you and your families as well as to the profession.

CARL H. YOUNG, Ed.D.
Pres.-Elect
Association for Physical and Mental Rehabilitation

ROTOMETER—Cont'd from p. 73.

prior to a pulse recovery test. In this case we are able to control load and time and determine the work performed.

Since fitness levels of disabled students are virtually unknown, we feel that this machine offers many possibilities for fitness testing with this group.

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ISOMETRIC—Cont'd from p. 75

exercise stopped, the blood flushed through the muscle and the circulation helped to dissipate the heat of the isometric contractions to the skin surface.

Since changes in skin temperature following isometric exercise were observed to be similar to those following isotonic "warm up" exercises, and since such generalized isotonic exercises are often associated with improved isotonic performance, it may be postulated that isometric "warm up" exercises for local muscular groups would also be followed by improved performance in isometric activities of those groups. It remains to be determined whether this skin temperature change is actually associated with improved isometric performance. A study designed to elucidate this point will be reported in a separate paper.

Conclusions

Under the conditions of this experiment the following conclusions are supported:

Local muscular activity in the form of 30 maximal isometric contractions of the right forearm flexor group performed in one minute raised the local skin temperature 1° F. Due to the phenomena of the thermal lag, this increase in skin temperature did not become observable until 3 minutes after the completion of the exercise. The local changes in skin temperatures observed to follow isometric exercise conform to the pattern which has been reported to follow generalized isotonic exercise.

Acknowledgement: The writer is indebted to Philip J. Rasch, Ph.D., of the Biokineties Research Laboratory, College of Osteopathic Physicians and Surgeons, for critically reviewing this paper.

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DR. TIMM PROMOTED

Dr. Oreon K. Timm, area medical director for the Veterans Administration in St. Paul, Minn., since January, 1958, has been appointed deputy to the VA assistant chief medical director for operation, in Washington, D. C. Dr. Timm will assist in directing operations of the VA's 170 hospitals, 91 outpatient clinics, and 18 domiciliary homes. He succeeds Dr. Horace B. Cupp, who is retiring after 30 years of VA medical service.

"From Other Journals"

Unless noted otherwise, all abstracts have been prepared by Philip J. Rasch, Ph.D.

E. D. Garber, Nutritional Aspects of Infectious Disease. *Naval Research Reviews,* March, 1960, pp. 9-12.

The 19th century's most spectacular contribution to medical science was the discovery of the causes of infectious disease; equally spectacular in this century was the control of these diseases by public health measures and by the use of drugs. Disease-inciting microbes are termed pathogens. The host, or animal expressing the disease, is the environment for the pathogen. If the host is resistant it may block the sequence of events leading to the production of the disease. Hence pathogenicity must be expressed as a dynamic host-parasite relationship.

Known sources of resistance do not explain all of the questions about pathogenicity. It is possible that some of these problems will be solved by a study of the nutritional aspects of pathogenicity. If a host does not furnish the nutritional requirements of the pathogen, the latter may lose its ability to incite disease. Experiments with plants have disclosed several methods by which a nutritionally deficient pathogen may become nonpathogenic for certain hosts.

Wallace P. McKee and Robert E. Bolinger, Caloric Expenditure of Normal and Obese Subjects During Standard Work Test. *Journal of Applied Physiology,* 15:197-200, March, 1960.

No consistent differences have been noted for age, sex, race or emotional state in the performance of standard exercise tests. Nineteen obese subjects and 25 normal persons were studied during rest and during a standardized exercise to evaluate the hypothesis that obese persons differ from normals in exercise efficiency. The caloric expenditure during the basal state is significantly greater for obese persons than for the non-obese. This difference is related to the increased surface area of the former. There is no difference in work efficiency between the two groups, but female subjects show significantly higher caloric expenditure during exercise. This may reflect the fact that increased mass in the male includes more muscle tissue, while that in the female includes more fat.

Edmund H. Volkart, Man, Disease, and the Social Environment. *Postgraduate Medicine,* 27:257-260, February, 1960.

Both medicine and social science are concerned fundamentally with man and his behavior. All sciences have overlooked one fundamental consideration: the state of man in health or illness is a total function of interaction between the internal environment, the external environment and the social environment. One central question is whether the social environment is an actual or potential variable in health and disease. The bulk of infectious and communicable diseases have been brought under control, but they have been replaced by chronic and disabling conditions. Such illnesses often seem associated with the person's relationships to social environment. The patient should be seen as a person constantly interacting with his social environment. The variables are obscure; they may lie in the stress mechanisms. The course and outcome of illness may depend more than we realize upon the social environment of the patient. We need more studies of the influence of the doctor-patient relationship, and the hospital as a social organization, on the course of therapy and rehabilitation.

Lucien Brouha, Effects of Muscular Work and Heat on the Cardiovascular System. *Industrial Medicine and Surgery,* 29:114-120, March, 1960.

Muscular exercise may strain the cardiovascular system to its maximum capacity and lead to complete exhaustion. When heat stress is present, the maximum reactions remain the same but are achieved with less work and in shorter time. Heart rate increases as soon as exercise begins, or perhaps even before. Rates of 250 beats per min. have been recorded after competition. It is considered that at rates over 180 the period of diastole is too short to permit an adequate filling of the heart, but so far as oxygen transport is concerned, the blood circulation remains fully effective at rates in excess of 200.

The "cardiac cost," or total number of heart beats above the resting level needed to perform a given task may be used to compare different work loads. The "cardiac debt" is the number of beats above the resting level occurring between the end of exercise and the return to the pre-exercise rate. This shows a greater variation than the cardiac cost and is an important factor in evaluating the physiological strain produced by muscular work.

During muscular activity the systolic and pulse pressure increase with the work load, while the diastolic pressure changes are insignificant. The most efficient cardiovascular adaptation to muscular activity is achieved when the systolic pressure in mm. Hg. remains numerically greater than the heart rate in beats per min. At the end of competitive performance systolic pressures of 240-260 mm. Hg. have been recorded in athletes with pulse pressures of 160-180 mm. Hg. As long as the pulse pressure remains constant or increases, muscular work can be pursued efficiently. A decrease of pulse pressure to half of its maximum value indicates fatigue and approaching exhaustion. After exhausting effort the pulse pressure may fall as low as 15-20 mm. Hg. Recovery is not complete until the pressure returns to the pre-exercise level, which may require several hours or days.

During high temperatures, the body temperature rises, accelerating the heart rate and increasing the amount of water lost thru perspiration. This partial dehydration puts an additional stress on the cardiovascular system, since the blood volume decreases, the venous return is impaired, and the viscosity of the blood increases.

The cardiac cost and the cardiac debt give a better measurement of the stress of muscular work than does oxygen consumption. Their sum is a measure of the total physiological cost for a complete work cycle. The pulse rate may be counted by hand at regular intervals during the first three minutes of recovery and a recovery curve constructed from these counts.

L. Jimenez Espinosa and J. Espinoso Iborra, Knock-Out and Syncope in Professional Boxing: An Electroencephalographic Study. *Electroencephalography and Clinical Neurology,* XII:196-197, February, 1960.

The study of syncopes caused by the oculo-cardiac reflex and the senocarotide reflex has been growing in importance. Whether these crises are similar to epilepsy is controversial. In a study of professional boxers who had been knocked out, a fainting reaction to the oculo-cardiac reflex was discovered. This suggests consequences that may arise from cerebral damage of a vascular type to boxers who have been repeatedly knocked out.

Boxing and Face Lacerations. *Journal of the American Medical Association,* 172:1116, March 5, 1960.

The ideal medicament to be applied during a bout to a facial laceration sustained by a boxer is a matter of controversy. Monsell's, ferric chloride, and epinephine solutions, various pastes, and such ointments as bismuth subgallate, zinc oxide, tannic acid, and carpenter's glues are used but are to be condemned. Topically applied thrombin or any approved thromboplastic substance appear to be the most effective coagulants and least injurious to the wound. Sterile petroleum jelly can be used but should be removed immediately after the fight. Ice or water compresses may be useful adjunctive aids.

J. MacNamara, F. J. Prime, and J. D. Sinclair, The Increase in Diffusing Capacity of the Lungs on Exercise. *Lancet*, 7121:404-406, February 20, 1960.

When oxygen is taken up by the alveoli of the lungs it penetrates the mechanical barrier of the tissue elements and fluids separating it from the molecules of hemoglobin in the red blood cells by a process of simple physical diffusion. The diffusing capacity is proportional to the area of the diffusing surface and varies inversely with its thickness. Normal rates are 15-25 ml. per min. per mm. Hg. at rest and 24-40 ml. during exercise. An earlier study showed that this rate is significantly affected by the minute volume of respiration, and that the exercise rate cannot be duplicated by voluntary hyperventilation. It was concluded that pulmonary diffusing capacity observed during exercise is due primarily to an increase in the area of capillary wall exposed to alveolar gas. This is mediated partly by hyperventilation and partly by increased cardiac output during exercise.

K. Lange Andersen, Atle Bolstad, and S. Sand, The Blood Lactate During Recovery from Sprint Runs. *Acta Physiologica Scandinavica*, 48:231-237, 1960.

Little evidence is available concerning recovery time for most athletic activities. After running 100 m. pulmonary ventilation reaches resting levels in about 10 mins. The lactic acid is still very high, which shows that lactic acid does not cause elevated pulmonary ventilation. Recovery after running 200 m. is similar. Blood lactate increases for 5-8 minutes after exercise. Thereafter recovery is exponential against time. Recovery time increases as the distances become longer up to about 400 m.; longer runs do not increase the recovery time. The removal of lactic acid from the blood is a slow process. The time interval between the two races should be at least long enough to permit recovery from the first run. This means 40 mins. between two 100 meter starts and at least 75 mins. for the 400 and 800 m. runs.

Philip J. Rasch, Ruth Maniscalco, William R. Pierson, and Gene A. Logan, Effect of Exercise, Immobilization, and Intermittent Stretching on Strength of Knee Ligaments of Albino Rats. *Journal of Applied Physiology*, 15:289-290, March, 1960.

The literature reveals almost nothing on the effects of exercise or stretching on ligamentous strength. Sixty male albino rats were divided into four groups. The first group ran in an exercise drum, the second was subjected to repeated stretching of one hind limb, the third group had one hind leg immobilized, and the fourth served as controls. At the end of 4 weeks (equivalent to 120 weeks in man), the animals were sacrificed, the muscle dissected from the hind limbs, and the amount of weight necessary to tear the knee ligaments apart was determined. Analysis of variance revealed no statistically significant differences between groups, leading to the conclusion that neither exercise, stretching, nor immobilzation affected the strength of the knee ligaments in adult albino rats.

E. Bando, T. Kakayama, H. Miyamoto, S. Ushikubo, and T. Sasada, On the Features in the Physical Fitness of the Champions of Weight-Lifting. *Japanese Journal of Physical Fitness*, 6:199-202, January 20, 1957.

Anthropometric measurements were made in 11 weightlifters. It was concluded that the persons who lifts heavy weights have very large and strong backs, great strength in the grip and great arm power. In these areas the degree of hypertrophy is large. The shoulders and chest are also large in these people, and the body possesses a triangular shape. Probably the reason is that these portions of the body are used to perform the lifts. It may be that this special type of body is due to the long hours of exercise, but further research is needed to determine whether this is characteristic of everybody who does this type of exercise. (Courtesy R. R. Schreiber and Jack Aoki)

Editorial, Shoes and Feet. *British Medical Journal*, 5171:488-489, February 13, 1960.

Some maintain that but for the effects of unsuitable footwear there would be no foot troubles apart from congenital disease and gross injury. Others believe that many common foot deformities are at least partially determined by inherent weaknesses in the foot. Evidence exists to show that some of the common foot deformities of civilized communities occur also in those who do not wear shoes. Most harm from unsuitable shoes arises during growth. Most observers agree that an excessive number of girls compared with boys have hallux valgus. Lake maintains the most important factor is the wearing of higher heels.

Chapter Activities

Ohio-Kentucky-Indiana Chapter

VAH, Louisville, Ky. was the site for the spring conference which was held in conjunction with Ohio Valley chapter of AART on April 2. The morning session was devoted to talks by Dr. Leo Rosenberg, Chief, PM&R Service, VAH, Dayton, Ohio; Dr. R. R. Kaplan, Director of Professional Services; Dr. Alphonse Guiglia, Chief, NP Service; Miss Mary Culbertson, Chief, Nursing Service; and the Rev. Frank Taafel, all of the staff of the host hospital.

During the afternoon meeting, Dr. Israel Muss, Chief, PM&R Service, VAH, Louisville, demonstrated the use of electromyography in Physical Medicine, and R. John R. Gott, Chief of Medicine, spoke on the management of the medical patient. At the business meeting which followed, Edward Charles, Lexington VAH was elected to the office of president-elect, and Verl Mangen of Dayton to the office of secretary-treasurer. Earl Mason, Chief, CT, VAH, Louisville is the incoming president.

Texas-Louisiana Chapter

The chapter held a joint meeting with members of the Texas AART on Mar. 25 and 26 at the VAH, Houston. During the first day, guided tours were made to the Texas Institute for Rehabilitation and Research and the Houston Speech and Hearing Center. On Mar. 26, conferees heard a welcoming address by Dr. Lee D. Cady, Manager, VAH, Houston and talks on long-term illness, PM&R bed services, activities of daily living, proper breathing, exploring for outside placement, rehabilitation nursing, and clinical training in corrective and manual arts therapy. An outstanding paper was presented on Mental Therapy in Prison by Mr. Ben P. Dillard of Texas Dept. of Correction. At the luncheon, the following awards were presented: Achievement Award to Dr. O. R. Smith, VAH, Houston; Corrective Therapy Award to Julian Vogel, VAH, Waco; and Past President Award to Will O. Bearden of VAH, Dallas.

Mid-Atlantic Chapter

The chapter held its annual spring conference on Apr. 29 and 30 at the VAH, Fort Howard, Md. Walter V. Hurley, Chief, CT, at the host hospital acted as program chairman of the conference which featured talks by Dr. Kurt Raab, Chief, PM&R Service, VAH, Fort Howard; Dr. Paul Richardson, Head, Div. of PM&R, Univ. of Maryland School of Medicine; and George M. Kilmer, CT.

Book Reviews

Conditioning Exercises, Games, Tests, by Karl C. H. Oermann, Carl Haven Young, and Mitchell J. Gary. (Annapolis: United States Naval Institute, 1960. Third Edition. 275 pp. $4.50)

This is a new edition of a text formerly known as *Conditioning Exercises*. It is designed for the man in the Armed Services, Y.M.C.A., school, playground, or other situation where he may have to give exercises to men in the mass. It affords, perhaps, the most complete coverage of the subject matter that the reviewer has ever seen. Such topics as the need for physical fitness, the organization and administration of mass activities, exercises and games, and the evaluation of the program are covered in considerable detail. The book is profusely illustrated with both photographs and drawings, and is indexed, but lacks any bibliographic apparatus. The text is unhestitatingly recommended to those having the responsibility for conducting exercise programs for large numbers of men.

PJR

Nonparametric and Shortcut Statistics in the Social, Biological, and Medical Sciences, by M. W. Tate and R. C. Clelland. (Danville, Illinois: Interstate Printers and Publishers, Inc., 1957. (2nd Printing, 1959). 171 pp. $3.95. Paper, offset).

This text should be of considerable value to the non-statistician researcher, since it brings together many of the shortcuts in standard parametric techniques which formerly were to be found scattered throughout various texts. Distribution-free techniques have been gaining favor among behavioral scientists largely because of their ease of calculation. The Tate and Clelland text provides a source of techniques whereby most of the drudgery has been removed from the parametric methods. In addition, it also provides an adequate discussion of the limitations of the non-parametric methods. However, one of the justifications for the use of nonparametrics is that occasionally the level of measurement for some data will not meet the rather rigorous assumptions of certain of the parametric tests. A clear discussion of the techniques permissable with the various levels of measurement would have increased the value of the text. The authors have extended many of the standard probability tables to include the ten and twenty percent levels, and for those interested in such levels, these figures are not readily available elsewhere.

The book had its origins as mimeographed material, and this type face does not make for easy reading or comprehension. It is to be hoped that future editions of this valuable work will employ a more legible type.

WRP

Weight Training and Weight Lifting for Physical Fitness in Nebraska High Schools, by Robert L. Higgins. (Lincoln: University of Nebraska. Mimeographed. 15 pp. Free.)

This material was originally presented at the March, 1958 meeting of the Nebraska Association for Health, Physical Education and Recreation. Apparently it is based on a Master's thesis, and is designed to provide the physical educator unfamiliar with weight training with the basic information necessary to conduct such a program. Space requirements, equipment, training programs, and instruction in weight lifting are included. Two pages are devoted primarily to illustrations of standard exercises. The approach is eminently practical and the pamphlet may be recommended to any busy physical director who needs an indoctrination in the field.

PJR

Elongation Treatment of Low Back Pain, by G. H. Hassard and C. L. Reed. (Springfield, Illinois, Charles C. Thomas, 1959, 78 pp. N.P.)

The meat of this book is largely the author's restatement of the techniques of Billig's *Mobilization of the Human Body*. Those interested in myofascial mobilization would do better to consult this latter source. Although contributing nothing original, there are several good illustrations of correct posture and lifting techniques, as well as stretching maneuvers for restricted vertebral motion and lower extremity myofascial tightness. Of interest are screening tests, particularly for the cervical and thoracic areas, that can be carried out by the physician's assistant.

The text is literally peppered with peculiar definitions and very questionable statements and claims:

Page 32: "90% of *proven* (sic) disc cases respond to conservative treatment."

Page 36: "The Trendelenberg test of standing on one leg and flexing the other is another disc test."

Page 36 (referring to X-ray): "It is not valuable on mechanical, infectious, or referred lesions."

Page 37: Five "tests specific for herniated disc" are listed. It is charitable to call these tests questionable. The definitions of a joint and a nerve are misleading.

This book is unsuitable for use by personnel who are not adequately experienced or supervised in the problem areas this book purports to deal with.

DJS

David G. Johnson and Oscar Heidenstam, Modern Bodybuilding. (New York: Emerson Books, Inc., 1958. 177 pp.)

This book is an overly ambitious attempt to cover practically the entire field of exercise in popular language. Various chapters seek to cover such extensive questions as health, age, physical type and temperament, theories of muscular development, calisthenics, training with apparatus available around the home, weight-training, weight training programs for athletes in various sports, and glossary of bodybuilding terms—all without so much as a single reference to the literature. "Methinks the writer doth attempt too much!"

In some of the chapters, such as the one on physical types and temperament, the concepts underlying the material have been so simplified and generalized that they lose all meaning. In other cases the chapter heading is misleading; "Theories of Muscular Development," for example, contains little more than the definitions of a number of kinesiological terms.

The volume is illustrated by a few photographs and a number of drawings. It might, perhaps, be suitable for introducing the young boy to the field of progressive resistance exercise, but offers nothing to the corrective therapist.

PJR

Essentials of Healthier Living, by Justus J. Schrifferes. (New York: John Wiley and Sons, 1960. 335 pp. $5.50)

This is a college health education text which, unlike most, assumes that the reader is capable of drawing intelligent conclusions from experimental data. This is not a catechism with "rules for healthier living," and the instructor who feels that health rules are necessary will be disappointed. Consequently, the text is somewhat advanced for the majority of high school students and instructors.

The book is well-written, the illustrations complement the textual material, and the subject matter is well organized. The material is presented in the following order: Orientation, Personal Health, Education for Family Living, Mental Health, Personal and Community Health Hazards, and Community Health. Schifferes has presented a fresh and intelligent approach to a subject which has been characterized by listless textbooks. There is available a free instructor's manual, *Methods and Materials in College Health Instruction*, which is keyed to the text and contains a 500-item annotated bibliography.

WRP

Postural Fitness—Significance and Variances, by Charles LeRoy Lowman and Carl Haven Young. (Philadelphia: Lea & Febiger, 1960. 341 pp. $7.50)

During recent years scientific investigations of posture have come almost to a standstill. This is due variously to the extreme difficulty of making satisfactory measurements, to the fact that there is lack of agreement as to what constitutes good posture, and to the fact that technically incorrect posture often has functional value. Lowman and Young implicitly recognize this problem by frankly avowing, "No definite standard of postural fitness for all is proposed, other than the suggestion of . . . striving toward the ultimate in body build and in efficiency of movement." Unfortunately, these two objectives are sometimes mutually exclusive.

The most directly useful parts of the book are those which consider the effects of common activities; the pages dealing with the position and activity of the newborn and the section entitled "Critical Analysis of Common Exercises" being especially valuable. The latter in particular should be read by every corrective therapist. It is noted that these authors are to be counted among those who disapprove of squats and deep knee bends.

One chapter is devoted to a description of corrective exercises and there is an Appendix which contains exercise schedules adapted from Lowman, Colestock, and Cooper's *Corrective Physical Education for Groups*, which has been out of print and thus unavailable for many years. These should be particularly useful to the novice teacher of correctives in the public schools.

Each chapter is followed by the References and by References for Extended Reading. Near the end of the book these are gathered into a single Bibliography. The text is profusely illustrated and is indexed. It should prove a useful reference work to students in the field.

PJR

Statistics in Research, by Bernard Ostle. (Ames: Iowa State College Press. Third Printing, 1958. 487 pp. $6.95)

Writers of advanced texts for other than college students are placed in the position of seeking an audience who, if they have the background requisite to an understanding of the text, do not need it. Ostle has pleasantly minimized this problem by methods unlike those of most statistical texts; he has a reasonably comprehensive discussion of the role of statistics in research, the assumptions underlying the various techniques are clearly set forth, the probable rationale by which certain of them were deduced is discussed, and a fair amount of the history of statistical inference is included. Curvilinear correlation techniques, which are rarely discussed by writers in the behavioral sciences, are adequately covered. However, it is rather startling to encounter the formula $a + bX + cX^2$ in its Greek form. In this respect, as elsewhere, Ostle has maintained the statisticians' tradition of non-conformity in statistical notation, and has not included a glossary of his symbols. *Statistics in Research* was written before the current interest in non-parametric methods had developed, and it is to be expected that future editions of this text will include such methods.

Although written by an agronomist primarily for researchers in agronomy, this is a text which would be a valuable addition to the reference library of any researcher in the behavioral sciences.

WRP

Measurement and Evaluation in Physical Education, by M. Gladys Scott and Esther French. (Dubuque, Iowa: William C. Brown Co., 1959. 493 pp. $6.25. Offset.)

This volume is written by women, for women students, about woman's physical education, and as such is one of the better texts available. There is no mention of such typically masculine activities as football, baseball, wrestling, track and field, or gymnastics, and herein lies the major criticism of the work. Textbooks present an opportunity for the undergraduate student to become acquainted with the problems associated with the physical education activities of the opposite sex, and it does not appear illogical to assume that such an acquaintanceship would aid in relieving many of the tensions currently existing between men's and women's departments of physical education. Scott and French mention the need for "social fitness" and "recreational fitness," but do not discuss them as they apply to a co-educational program.

The material on statistics could be improved. While linear correlation from the coefficient through regression equations and multiple correlation is thoroughly discussed, there is no material concerning the comparisons of group means. "Very few research workers do correlations, for example, by the method described herein," say the authors. They then suggest the use of mechanical aids, or, if these are not available, the services of a test agency. Yet nowhere is the machine formula for linear correlation, for example, given. It is to be hoped that future editions of this work will contain discussions of the "t" test, the analysis of variance, and the non-parametric methods. The ease of calculation of these last, in addition to their lack of rigorous assumption, make them particularly valuable to the physical education teacher.

WRP

The Foot And Ankle, 4th Edition, by Philip Lewin. (Philadelphia: Lea & Febiger, 1959, 612 pp. $14.00)

The author of this work states that he desired to write a book on the foot equivalent to that on the hand written by Kanavel. It would appear he succeeded. Undoubtedly this is one of the most extensive treatises on the foot and ankle. From the basic historical aspects, and the anatomy, physiology, biomechanics and basic principles of treatment, the text leads into the clinical areas of congenital defects, injuries, fractures, dislocations, and infections of the toes, foot, and ankle. Neurological lesions affecting the foot and ankle are extensively covered, with a special chapter on poliomyelitis and the spastic paralysis of cerebral palsy, venous and arterial disabilities, tumors, and skin disorders. The ten-page appendix concludes the book with a discussion of such varied subjects as foot hygiene and sanitation, chilblains, frostbite, care of the nails, surgical and anesthesia techniques, and conditions involving the foot and ankle that result from a relationship between them and the knee, hip, and low back.

It is doubtful if one can find in any other text such extensive information on so many entities that involve the foot and ankle. The completeness of coverage is only slightly reduced by the brevity of certain subjects. The more important entities, however, are in general most adequately covered, and the twelve page bibliography is available for further investigation should it be necessary. Orthopedic and industrial surgeons and physiatrists, as well as those in the ancillary services who deal with the lower extremity will find this book a useful addition to their libraries.

MLB

How We Do It Game Book, Second Edition. (Washington, D. C.: American Association for Health, Physical Education and Recreation, 1959. 310 pp. $3.00)

The book presents almost 200 original games under the categories of (1) Badminton, Handball, Tennis; (2) Basketball; (3) Bowling; (4) Dodge Ball; (5) Football; (6) Low Organization; (7) Golf; (8) Hockey, Lacrosse; (9) Baseball, Kickball, Softball; (10) Soccer, Speedball; and (11) Volleyball. The games were selected from the column "How We Do It" which appears in the *Journal of Health, Physical Education and Recreation*. The activities were developed and used by professional physical educators and are applicable to either the gymnasium or the athletc field. Each game is described through the following topics: Type (as "football"); Playing Area (indoor or outdoors); Level (age); and How We Play It (including rules).

The text provides a good supplementary source for lead-up skills and game variations and could prove a valuable addition to a professional library.

HJB

Functional Anatomy of the Limbs and Back, by W. Henry Hollinshead. Second Edition. (Philadelphia: W. B. Saunders Company, 1960. 403 pp. $9.00)

The academic level of the material in this specialized volume falls somewhere between Basmajian's *Primary Anatomy* and the large anatomies of Gray, *et al.* As the title indicates, it is designed primarily as a presentation of the muscular system and its innervation, the other systems being dismissed in a few pages. The book is planned with the needs of the physical therapist in mind, and it contains several useful features that are often difficult to locate in similar texts — landmarks, effects of various lesions and of surgical intervention, the relationship of structure to surgical technique, directions for palpation of various structures in the living subject, and similar matters —which would often be useful to the corrective therapist as well. A total of 159 drawings, a list of synonyms, and an index are included.

However, the needs of the corrective therapist are somewhat different from those of the physical therapist, and it is the opinion of the reviewer that most of the former would find a good kinesiology more directly useful, although this book would make an excellent reference for some of the specifically medical considerations which are seldom dealt with in such works. At $9.00, compared with $6.50 for the Basmajian text or $7.50 for the Rasch and Burke *Kinesiology and Applied Anatomy*, the book may well find a greater sale among libraries than to individuals.

PJR

Teaching Nutrition in the Elementary School, by Mary A. Banks and Margaret Dunham. (Washington, D. C.: American Association for Health, Physical Education and Recreation, 1959. 32 pp. 75c. Paper.)

Here is an interesting little booklet prepared for nutrition teachers working at the elementary school level. It is divided into three parts. The first contains Basic Nutrition Facts for Teachers, including the food groups, planning meals, and principal food sources. The second deals with nutrition teaching and suggested activities at the primary and intermediate levels. The last lists resource materials, films, and film strips. Although written for the elementary teacher of nutrition, the booklet may also be found to be of some value to the occupational and educational therapist and to the teacher of health.

HJB

News and Comments

VA REPORTS SUCCESS WITH LUNG SURGERY

Successful results in use of surgery for coccidioidomycosis of the lungs, a fungus disease resembling tuberculosis, are reported from an 18-hospital Veterans Administration-Armed Forces cooperative study of the disease. Dr. David Salkin of the San Fernando, Calif., VA hospital said the research shows that with proper selection of cases and attention to medical detail, complications of surgery for pulmonary coccidioidomycosis are no greater than complications of surgery for tuberculosis of the lungs.

He said that apart from use of the drug amphotericin-B, which is under study in the VA-Armed Forces research, there is no specific therapeutic agent for coccidioidomycosis. Lung surgery for the fungus infection should be regarded in the same light as lung surgery for tuberculosis prior to development of the modern anti-TB drugs, he added.

The study to date includes 716 coccidioidomycosis patients treated in 18 VA and Armed Forces hospitals during the years 1955-1958.

The VA hospitals in the study are those at Phoenix, Tucson, and Whipple, Ariz., Fresno, Long Beach, Los Angeles, Oakland, and San Fernando, Calif., Albuquerque, N. Mex., and Houston and Kerrville, Texas.

PLANS FOR '61. Paul Roland recently visited the VA's Physical Medicine and Rehabilitation Service office in Washington, D. C. to discuss plans for a specialized training course in all phases of PM&R to be held July 14 and 15, immediately following the 1961 convention in Indianapolis. Mr. Roland, coordinator, PM&R, at Indianapolis VAH is chairman of the convention. In the photo are Joseph H. Van Schoick, Supervisory Administrative Officer and Chief, C.T.; Mr. Roland; Dr. A. B. C. Knudson, Director, PM&R Service; Edgar E. Best, Chief MAT and Acting Chief, ET; and Dr. Frank J. Schaffer, Assistant Director, PM&R Service.

VETERANS' FAMILIES ENROLLED TO AID PATIENTS

Veterans Administration mental hospitals are putting the families of patients on the hospital team. The Lexington, Ky., VA hosiptal, for example, a 1,171-bed institution, uses a successful method carried through by the patients themselves. They call it "Family Acquaintance Day."

With the active encouragement of hospital officials, the 74 patients of one ward invited their families to come to Lexington and spend a whole day with them, seeing at first hand the life they lead in the hospital. Each patient signed an individual letter prepared for his family. The results were beyond expectations. One hundred and fifty visitors came, a total of 50 families of patients. One group traveled 800 miles for the occasion. Six states were represented. The patients were dressed up expectantly to greet their families.

A program of short welcoming talks by the hospital manager, the chaplain and medical and nursing members of the staff greeted the visitors. Family groups were introduced to other families, and a photographer was on hand to snap informal family photos. The visitors were shown samples of work done by patients in the hospital hobby shop and viewed motion pictures of a day's outing the patients had taken to a nearby state park. Light refreshments were served.

One mother said, "I had no idea it was like this. I don't know what I expected, but I feel better about everything and I will come now more often."

Another relative commented. "I didn't realize so many other people experienced mental illness in their family. I had just thought of ourselves."

Still another said, "I will feel so much easier when I visit again. Everyone is as normal as anyone I know."

And a patient said, "I really can't believe they're here. They kept saying they could come some time but I thought they wouldn't make it."

Hospital officials were enthusiastic over the beneficial results. One said, "In this type of illness, the patient's family and friends are needed more than in any other kind."

DAY CARE CENTERS A FEATURE OF MENTAL HYGIENE CLINICS

A new design for living is being created in the pleasant surroundings of day care centers at Veterans Administration mental hygiene clinics. The five VA day centers are new developments in the battle against mental illness.

For the mentally ill veterans who spend their time there, the design for living combines many small happenings—a game of shuffleboard, occupational therapy in leather work or ceramics, discussion of books, current events, or music, helping to prepare a midday snack. To the untrained visitor, the relaxed atmosphere of the day center can be deceiving.

The centers' casual-appearing activities are far from casual. Each is carefully planned to contribute to mental health. For the veteran-patients—many of whom have had years of hospital treatment—regaining mental health is greatly assisted by development of new interests, activities, and associations with other people.

Psychiatrists call this resocialization. The aim is for the veterans to become able to manage their own lives and hold paying jobs. The day center helps the patients to achieve this goal and at the same time frees mental hospital beds for acutely ill patients.

The pioneering day center at the Brooklyn, N. Y., VA outpatient clinic has attracted nationwide attention from psychiatrists and is proving most successful in guiding the mentally ill on the road to mental health. Many of the patients there are again adjusting to family life.

The day center at the Veterans Benefits Office in Washington, D. C., was established in February, 1960. The first such center in the Greater Washington area, it has only begun to accept VA patients from nearby hospitals.

The other VA day centers are at the agency's outpatient clinics in New York City, Boston, and San Diego. The programs vary somewhat from center to center but are essentially the same. Volunteers from the community play an important part at each.

A typical week's schedule at the VBO center includes two one-and-one-half-hour periods of group psychotherapy, music therapy, games, crafts, movies at the center, a library period and current events discussion led by the librarian, an open house for relatives of the patients on Thursday afternoon, a daily 30-minute conference between patients and staff members, and field trips in the Washington area. The staff of the center includes a psychiatrist, Dr. T. M. Mackenzie; a recreation therapist, Miss Naomi Costello, and a social worker, Kenneth Kehoe. They are assisted by other staff members and by volunteers from veterans and service organizations. An early volunteer is Mrs. George H. Seal, Maryland Department Commander of the Disabled American Veterans Ladies' Auxiliary. Mrs. Seal is the wife of the national service officer in the National Claims Service of the DAV's Washington office.

The Red Cross furnishes transportation for the field trip for patients of the center once each week and also is supplying volunteers for the center.

Eventually the center probably will care for 40 veterans a day. Additional full-time and volunteer personnel will be added to Dr. Mackenzie's staff as the patient load grows. At present the center has five patients. Each has been hospitalized several years at the VA's Perry Point hospital, Perryville, Md. Two of the five live with relatives. Two live in rooming houses—a major step for them.

The daily staff conference gives the veterans an opportunity to discuss their housing, handling money, and other such matters of daily living that are likely to be difficult for long-hospitalized patients.

The weekly open house brings the families of the veterans into the therapy program, to promote a better understanding of mental illness and of the veterans among their relatives.

Games, to encourage the patients to enter into friendly relationships and to promote physical health, include table tennis and shuffleboard. Crafts at the center are ceramics, leather work, painting, and woodworking. On field trips the group has visited the Naval Observatory, the zoo, and the Bureau of Printing and Engraving. As part of the program at the center, the patients have lunch together and prepare the meal themselves at a snack bar in a room used for crafts and sports.

"The VBO day center is a result of the continuous rise in demand for psychiatric services at the VBO mental hygiene clinic for veterans with service-connected mental illness," said Dr. J. W. Walsh, director of the clinic. "The day center provides a much-needed means of therapy that is intermediate between full-time hospitalization and the types of therapy available in the conventional mental hygiene clinic."

STUDY TRANSPLANT OF TISSUES AND ORGANS

Research by Veterans Administration doctors is laying groundwork for surgeons to replace successfully diseased tissues and ultimately organs with healthy ones, according to Dr. Lyndon E. Lee, Jr., VA chief of research in surgery. Dr. Lee said such transplants have been considered impossible in the past because the body rejects tissue grafts from others—except between identical twins—and materials from which artificial organs can be constructed.

He said surgeons at the Memphis, Tenn., and Oteen, N. C., VA hospitals are studying techniques of replacing major blood vessels.

Sutures, or surgical threads, are being tested at the Durham, N. C., VA hospital, Dr. Lee said.

Information on the key role played by vitamin C in healing of wounds is being obtained from research at the Durham VA hospital and the Martinsburg, West Va., VA center.

To facilitate work on transplantation of body organs, which requires technically perfect surgical joinings of blood vessels, a research group at the Oteen VA hospital is using and improving models of a surgical stapling device developed there.

Of the suture materials tested at the Durham VA hospital, nylon, dacron, and teflon have been found to have the least harmful effects on body tissues and to possess the maximum tensile strength. Teflon was found to be especially tough and resistant. However, surgical knots of these synthetic materials tend to become untied after a time. The Durham tests indicate that if this tendency can be counteracted, the synthetic threads, particularly teflon, will prove highly satisfactory as sutures.

Studies at the Durham VA hospital and Martinsburg VA center on the role played by vitamin C in healing of wounds show that wounds do take up more ascorbic acid than do normal tissues and that patients should receive large quantities of vitamin C in their diets in preparation for and following surgery.

Dr. Lee said studies of this sort, leading toward transplants of human organs, are especially important for prolonging life and health in older persons—a field of interest to the VA because of its increasing number of aging veteran-patients.

ANNOUNCE COURSE ON REHABILITATION OF THE MENTALLY RETARDED

Teachers College, Columbia University and the Association for the Help of Retarded Children, Inc. have announced a work conference on "Rehabilitation of the Adolescent and Adult Mentally Retarded — Psychological and Vocational Approaches." The Conference will be held from July 11 to 22 at AHRC Training Center and Workshop, 116 E. 27th St., New York and at Teachers College. Abraham Jacobs, Ph.D., of Teachers College is acting as Coordinator of the conference.

The conference will be given as a two-credit course for students who meet the entrance requirements of Teachers College. Students may also enroll on a non-credit basis. The fee for the conference is $74 for non-credit, and $10 extra for those enrolling for credit. A limited number of $250 stipends have been made available from the Office of Vocational Rehabilitation for individuals living away from New York City.

LACK OF ANXIETY BIG FACTOR IN TB RECOVERY

Anxiety is a special enemy of the person with tuberculosis, Veterans Administration research indicates. Studies made by psychologists at 18 VA hospitals show that for tuberculosis patients lack of anxiety is related to good adjustment to hospitalization, favorable response to treatment, and good re-adjustment to community life after hospital discharge.

The findings are expected to be important in helping patients get the maximum benefits from the hospital treatment programs, according to Dr. Claire M. Vernier, psychologist of the Baltimore VA hospital who served as coordinator for the studies.

The research involved approximately 900 tuberculosis patients and was carried out as three cooperative studies to analyze the relationships between psychological variables of the patients and their adjustment to hospitalization, rate of response to medical treatment, and re-adjustment to community life after hospital discharge.

Personal history and other social and medical data on the patients were collected. Psychological tests and rating sheets were used to evaluate personality, attitudes toward hospitalization, response to treatment, and adjustment to life situations.

The information was converted to punch cards and processed electronically in the central laboratory for the studies, at the Baltimore VA hospital.

In the study of adjustment to hospitalization, 44 items from the rating scales were selected, which yielded an index of the patient's adjustment as seen by the physician, the nurse, the nursing assistant, and the patient himself. The patient's behavior was seen similarly by all four.

Good adjustment to hospitalization was significantly related to a favorable response to treatment for patients with far advanced tuberculosis.

Among patients with far advanced disease, those with less anxiety responded better to treatment than did those who were more anxious. Anxiety also was found related to poor response to treatment in patients with moderately severe tuberculosis who had lung cavities.

To check the validity of these findings on response to treatment and the test battery developed for predicting this response, VA psychologists are conducting further cooperative studies using tests more sensitive to the anxiety factor, measures of the autonomic nervous system, and endocrine tests.

The study of community adjustment found four main factors that relate to job security, health, and other good adjustment. Dr. Vernier said the test battery developed to predict community adjustment seems satisfactory and is being used in a current followup study of the previously hospitalized patients, in which 10 of the original 18 hospitals are participating.

STUDY EFFECT OF CARDIOVASCULAR ILLS

A five-year study of 2,100 men at the Veterans Administration center in Los Angeles to determine what effect diet has on hardening of the arteries, heart attacks, and strokes, has been announced by the VA.

The study is one of the most comprehensive ever planned for research on the key question of fat in the diet.

Dr. Seymour Dayton, chief of a general medical section of the center, and Dr. Morton Lee Pearce, chief of the cardiology section, indicate that the study will utilize many revolutionary methods. One of the most promising is a technique that will break down and analyze a single compound to a sensitivity of a millionth of a millionth of a pound.

Long-term use of such intensive research methods, applied for the first time to a large medically-controlled volunteer group of elderly people, promises to open the door a bit further on the understanding of mankind's greatest killers—heart attack and strokes.

Cooperating with the VA in this study are the Los Angeles County Heart Association and the Arthur Dodd Fuller Foundation.

NURSING ADVOCATED AS PROFESSION FOR MEN

Men could do much to alleviate the serious shortage of nurses according to Leonard F. Stevens, chief nurse of the St. Cloud, Minn., Veterans Administration hospital. The 53-year-old Stevens strongly advocates nursing as a profession for men. "There is no reason why nursing should be limited to women," he said. "In fact the first nurses were men. After men get into the field they make it a career. Many women marry, have families, and leave the profession, although many return in later years."

Men are playing an increasingly important part in furnishing professional nursing care in VA hospitals, Stevens pointed out. Of the agency's 170 hospitals, 124 now have men on their staffs as professional nurses. The 124 hospitals employ a total of about 500 men as nurses. Of these, about 125 are in key positions of nursing education and administration. Not quite half of the 500 work in VA mental hospitals. Actually, today more men than women care for the ill in psychiatric hospitals, Stevens said.

At the St. Cloud VA hospital, for example, Stevens heads a staff of professional nurses—all women. "But we also have about 300 professional staff members, nursing assistants," he said. "Most of these are men."

Stevens, who holds a master's degree from Boston University in courses relating to the field of nursing, first became interested in the profession during high school days when illness delayed his graduation a year. A younger sister set nursing as her educational goal and was an influence on his decision to pursue that career. A native of Deerfield, N. H., he took his nursing training at the McLean Hospital, Waverly, Mass. On his graduation in 1930, he became head nurse, instructor, and supervisor at the Sheppard Pratt Hospital, Baltimore. In 1942 he resigned to join the Navy.

The military experience directed Stevens' interest toward veterans hospital work. On his discharge in 1946, he joined the VA nursing service at the agency's hospital in Northampton, Mass. In August 1951, he was assigned to the VA's central office in Washington, D. C., in an administrative position. In November 1952 he was assigned as chief nurse at the Salt Lake City VA hospital. After five years, he was transferred to the Jefferson Barracks, Mo., hospital, where he served in the same capacity. He was transferred to the St. Could VA hospital in May 1959.

Stevens believes most men are not aware of what nursing has to offer as a rewarding and satisfying career. "When I made my decision to enter the nursing profession, it was either that or becoming a bank clerk," he said. "I have not regretted my decision and would not have changed it."

STRESS AND TENSION RAISE CHOLESTEROL LEVEL

Highly emotional stress or extreme, prolonged tension often raises the cholesterol level in the blood despite diet, proper exercise and rest, doctors at the Oklahoma City Veterans Administration hospital have found. Cholesterol, a fatty-type substance found in certain foods, notably eggs, animal fat or fatty fishes, normally is found in the blood, bile and other parts of the body. Cholesterol also appears to be related to certain diseases of the arteries and heart. Many doctors believe that cholesterol directly influences arteriosclerosis and other arterial diseases.

In the study at the VA hospital at Oklahoma City, patients with artery disease were kept on a strict diet and the amount of their exercise was kept constant from day to day. Cholesterol in their blood still went up occasionally, but only during periods of stress and tension.

The doctors found that emotional tension alone can increase cholesterol 35 percent within an hour.

The diets of the patients were "average American" with approximately 40 percent of the caloric content in fat. Psychological data were gathered through daily interviews, repeated psychological testing and direct observation of behavior on the ward.

The study at the VA hospital is part of a heart research program that is being done by the Veterans Administration in collaboration with the Oklahoma Medical Center.

RESEARCH MAY CHANGE BASIC CONCEPTS OF DIABETES

Vast new areas of research may be opened by the discovery made by two doctors engaged in research at the Veterans Administration hospital in the Bronx, N. Y., that patients are able to "manufacture" insulin in considerable quantities. The findings may reverse the whole concept of diabetes.

A method of measuring "human" insulin in the body has been developed by Dr. Rosalyn S. Yalow and Dr. Solomon A. Berson. Using this method, they have found that adult diabetics secrete insulin but that other factors prevent their bodies from utilizing it. The relation between insulin levels and other factors which determine the body's ability to use sugar properly can now be more fully investigated.

"This discovery opens vast new areas of research in this disease," said Dr. A. M. Kleinman, manager of the Bronx VA hospital.

RESEARCH FAVORS LOWER DOSAGES FOR ISONIAZID

Improved drug treatment for tuberculosis will result from new Veterans Administration-Armed Forces research findings on the anti-TB drug isoniazid, the VA has reported. A 58-hospital study shows very high dosage of the drug is no more effective than the dosage in the commonly used isoniazid-PAS drug combination for TB patients with lung cavities.

In addition, the higher dosage is more likely to produce undesirable drug reactions and does not slow the rate at which the TB microbes develop drug resistance, the research indicates.

The findings were reported by Dr. H. William Harris of the Salt Lake City VA hospital at the 19th VA-Armed Forces Conference on the Chemotherapy of Tuberculosis, held in Cincinnati. The conference is the annual meeting for the large-scale VA-Armed Forces cooperative studies of newer drugs for tuberculosis, which have tested these drugs to the benefit of the entire medical profession since 1946.

$5,000 OFFERED FOR BETTER WHEEL CHAIR

An inventor who can devise a revolutionary wheel chair to make it easier for a physically handicapped person to move around in an industrial building can win himself a $5,000 prize, it has been announced by Secretary of Commerce Frederick H. Mueller, speaking for the National Inventors Council, and Major General Melvin J. Maas, USMCR, Ret., Chairman of the President's Committee on Employment of the Physically Handicapped.

"This wheel chair will have to be quite a radical development," the spokesmen said, "but if it can be developed many more physically handicapped people can be employed. Some firms are reluctant to hire capable persons dependent on wheel chairs because of the difficulty of bringing the chairs into and out of the industrial space."

The chair must meet the following requirements:

- Maximum weight of occupant—200 lbs.
- Approximate weight of chair—50-75 lbs.
- Wheel chair to be capable of being folded by user and stowed in interior of automobile.
- Should be capable of negotiating any stairs with average height risers and variable depth of treads as found in office buildings and homes. Should be able to turn on any stair landing large enough for the wheel chair to maneuver.
- In ascent it is preferable that the occupant be able to negotiate the stairs unaided by an attendant. As an alternative, an attendant could assist and thus permit the chair to be tilted backwards and steadied by the attendant. In this position the chair and occupant should be in reasonable balance so that no more than 15-25 lbs. weight will be transferred to the attendant.
- In descent the wheel chair can be backed down if it is not feasible to descend with the occupant facing down the stairs. Other variations as described previously for ascent may apply here also.
- The chair should be self-propelled to eliminate dependence on outside sources.
- Operation of the drive mechanism by either the occupant or an attendant should be possible.
- Effective arm strength of the occupant will be a minimum of 10 lbs. Speed of ascent or descent is not a critical factor but it should be a reasonable rate.
- Retail cost of production models of the proposed wheel chair should be no more than $500. Current models of self-propelled, tubular frame, folding wheel chairs are priced at approximately $150 retail and $80 wholesale.

The Secretary and General Maas have designated the National Inventors Council in the Department of Commerce as the agency to receive and screen ideas presented. It will be the responsibility of the Council to present those ideas which show promise to three judges whose task will be to select the best one which they determine to be a practical and workable concept and to recommend the grant of a prize in the amount of $5,000 to its proposer. In the event that substantially identical workable concepts are proposed and recommended, the prize money will be equally divided among the proposers. The judge's decisions will be final. The juges selected by the President's Committee on Employment of the Physically Handicapped are:

Willis C. Gorthy, Director
Institute for the Crippled and Disabled
New York City
Dr. Leonard Carmichael, Secretary
Smithsonian Institution
Washington D,. C.
Admiral Luis de Florez, USN, (Ret.)
National Inventors Council
Englewood, New Jersey

General Maas and Secretary Mueller advise that the prize money has been provided by a public-spirited, private citizen who has long been interested in the betterment of the physically handicapped. It should be noted that the submission of these ideas to the National Inventors Council does not transfer title in them to the Government nor does it convey any promise to pay for any concepts examined. The only condition implied in this inventive search is that if a practical and workable idea results and the prize is given to its proposer, he will not use any proprietary rights he may have to delay or impede commercial introduction of the device. It may be that no single concept will satisfy the requirements as set forth in the problem. In such case the judges reserve the right to grant lesser prizes to inventors if features of their ideas might be combined into a practicable and workable design.

NUTRITION STUDY MAY AID CARDIOVASCULAR RESEARCH

A palatable diet containing liquid vegetable fats instead of animal fats and solid shortening has been developed at the Veterans Admiinstration center in Los Angeles. This study of fat in the diet, being made at the center, is perhaps the most comprehensive research program on this key question ever undertaken. The study is aimed at determing whether altered food habits can decrease the number of heart attacks and deaths from heart disease.

One of the new foods for the years-long study is a "filled milk" — skimmed milk containing deflavored soybean oil, vitamins A and D, and synthetic butter flavoring. The product cannot be distinguished from whole fresh milk.

Frozen dessert, made in a number of flavors, has the taste and other characteristics of ice cream, except that the butter fat has been removed and replaced by safflower oil.

Cakes, cookies, pies, and other bakery products, normally high in animal fats, are prepared with corn oil.

In preparing meat, the lean is carefully removed from the fat and the de-fatted red meat is prepared by letting it absorb seasoned corn oil, which replaces the animal fats with unsaturated vegetable fats. The meats then are roasted in the conventional manner. Fried and grilled cuts are basted with the special seasoned oils and served with a vegetable oil gravy.

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Proposed by ..... Address of one proposing .....

..... Applicant's Signature .....

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Names of college or university

.....
Degrees(s) (Major)

*Requires additionally either (a) 250 hours of clinical experience under medical supervision; (b) 6 months experience in rehabilitation; (c) master's degree in Physical education which includes (a).

II. — PROFESSIONAL MEMBERSHIP

I received my ..... degree or certificate from .....
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.....

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(Please list profession related to rehabilitation such as physician, nurse, etc.)

Answer (a), (b), or (c) as the case may be:

(a) My major was ..... (must be in allied medical or educational field)

(b) I am a graduate of ..... course leading to certificate in .....
(must be in an allied medical or educational area)

(c) I have a ..... degree on graduate level (must be in an allied medical or educational area)

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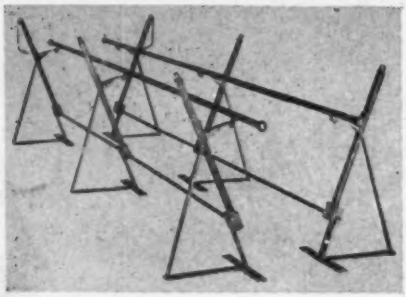

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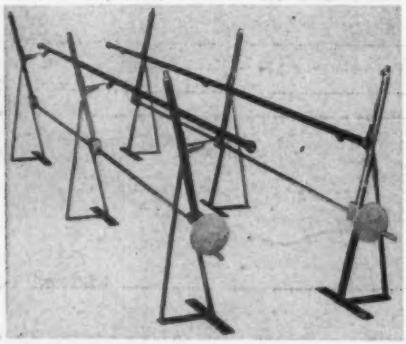

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Requires 12" floor-space. Each section adjustable in height from 22" to 44". Width adjustment 14" between high and low positions.
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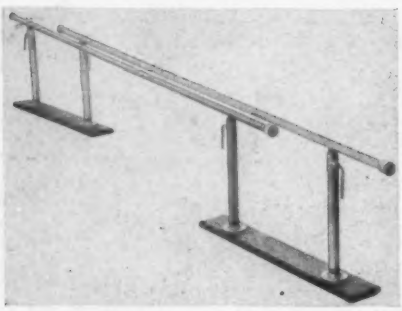

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